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SQUARE DEAL SHIPPING DENSITIES (U)

by

Jack Scheu

FINAL TECHNICAL REPORT

April 1975

Report No. 74-12

Sponsored by:

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER No. 74-12	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) SQUARE DEAL Shipping Densities(U)		5. TYPE OF REPORT & PERIOD COVERED Final Technical Report
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Mr. John E. Scheu		8. CONTRACT OR GRANT NUMBER(s) N00014-71-C-0118
9. PERFORMING ORGANIZATION NAME AND ADDRESS Raff Associates, Inc. 912 Thayer Avenue Silver Spring, Maryland 20910		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Long Range Acoustic Propagation Project Ocean Science Program, Maury Center for Ocean Science, Dept. of the Navy, Wash. DC		12. REPORT DATE April, 1975
		13. NUMBER OF PAGES 154
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Office of Naval Research 800 North Quincy Street Arlington, Virginia 22217		15. SECURITY CLASS. (of this report) CONFIDENTIAL
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE GDS

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18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Square Deal	Acoustic Exercise
Shipping Density	LRAPP
Environmental Exercise	Aerial Surveillance

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

(C) This report contains a description of the shipping surveillance conducted and of the shipping data gathered during the SQUARE DEAL Exercise, held in August and September, 1972, under the sponsorship of LRAPP. A description is given of the aircraft

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20. Abstract (Continued)

operations and the areas covered, and of the basic data collected and the data reduction methods employed. Charts are presented of ship counts in 1° x 1° cells for each of the four days of shipping surveillance. Also included are tables of ship locations and of ship attributes such as speed, course, size, and type. The shipping densities found in SQUARE DEAL are compared with three other sources of shipping density. The variation of shipping density within SQUARE DEAL and possible causes thereof are discussed.

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PREFACE(U)

(C)One of the goals of the SQUARE DEAL Exercise was to correlate the measured low frequency ambient noise with the attributes of the presumed major source of this noise, surface shipping. The goal of aerial surveillance was to locate those ships, and to measure those ship attributes that contributed significantly to the measured noise, given the finite resources available.

(U)These resources were of two general types. Fast, high flying aircraft that could survey large areas of ocean, without being able to gather detailed information about each surface ship encountered, and slower, low flying aircraft which, while having a smaller coverage area, were able to measure more detailed information such as speed, course, and length.

(U)Three questions emerged. What areas should be covered by the Low Flyers, the High Flyers, and would the areas so surveyed produce a sufficiently high fraction of the total noise. To answer these questions, a computer simulation model was developed which calculated two Importance Functions, each of which associated an "Importance Number" to equisized areas surrounding each acoustic receiver. Inputs to this model included detailed propagation loss curves for the region and historical shipping densities and source levels. One of the Importance Numbers was a measure of an area's expected contribution to the ambient noise measured at a receiver. The other was a measure of the changed importance of a given area if the number or positions of ships in the area were perturbed. Using the results of this model, High Flyer operations were planned to cover areas of maximum importance to the mean of ambient noise. Low Flyer operations were conducted over those areas of maximum importance to the variation in ambient noise. As was perhaps to be expected, the model suggested Low Flyer coverage near receivers and High Flyer coverage at greater distances.

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I -- SURVEILLANCE AIRCRAFT OPERATIONS(U)

(C)Shipping surveillance was conducted during exercise SQUARE DEAL to relate ambient noise spectral densities to shipping densities and to provide inputs to models of ambient noise. Through the combined efforts of the Royal Air Force (NIMRODs, VICTORs, VULCANs) and the U.S. Navy (P-3Cs), a total of 34 surveillance sorties were flown as shown in the following table.

TABLE 1(C)
Number of Surveillance Sorties(U)

	NIMROD	P-3C	VICTOR	VULCAN
6 August 73	2	2	2	2
21 August 73	2	2	3	1
29 August 73	2	2	3	2
8 September 73	2	2	2	3

LOW-FLYERS(U)

(C)The NIMRODs generally operated out of Kinloss, Scotland with the exception of one sortie that began at St. Mawgan, Cornwall and ended at Lajes, the Azores. The P-3Cs began each mission at Keflavik, Iceland and recovered at either Keflavik, St. Mawgan, Lajes, Kinloss, or Mildenhall (See Figures 1, 3, 5, 7). The NIMRODs and P-3Cs (both referred to as Low-Flyers) provided a detailed inspection of the areas of greatest acoustic interest. Low-Flyer tactics were intended to locate ships; to inspect ships visually and thus provide such attributes as size, type, nationality, and name; and to permit the calculation of ship speed and course from multiple radar contacts. The data collected on these flights were recorded on forms similar to Figures 9-12. SQUARE DEAL observers, either members of a military briefing team or civilian scientists, were present on 13 of the 16 Low-Flyer sorties.

HIGH-FLYERS(U)

(C)The VICTORs operated out of Wyton and the VULCANs out of Scampton. These aircraft (both types referred to as High-Flyers) were used to

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provide ship locations only, over large ocean areas. They flew pre-determined tracks (see Figures 2, 4, 6, 8), typically at 40,000 ft and 500 knots, with their radars operating continuously and providing surface coverage within 100 n.m. swaths. The radar scopes were photographed three times per minute as an aid to post-flight analysis. Additionally, data were recorded on forms similar to Figures 9 & 10. No SQUARE DEAL observers were present on High-Flyer sorties.

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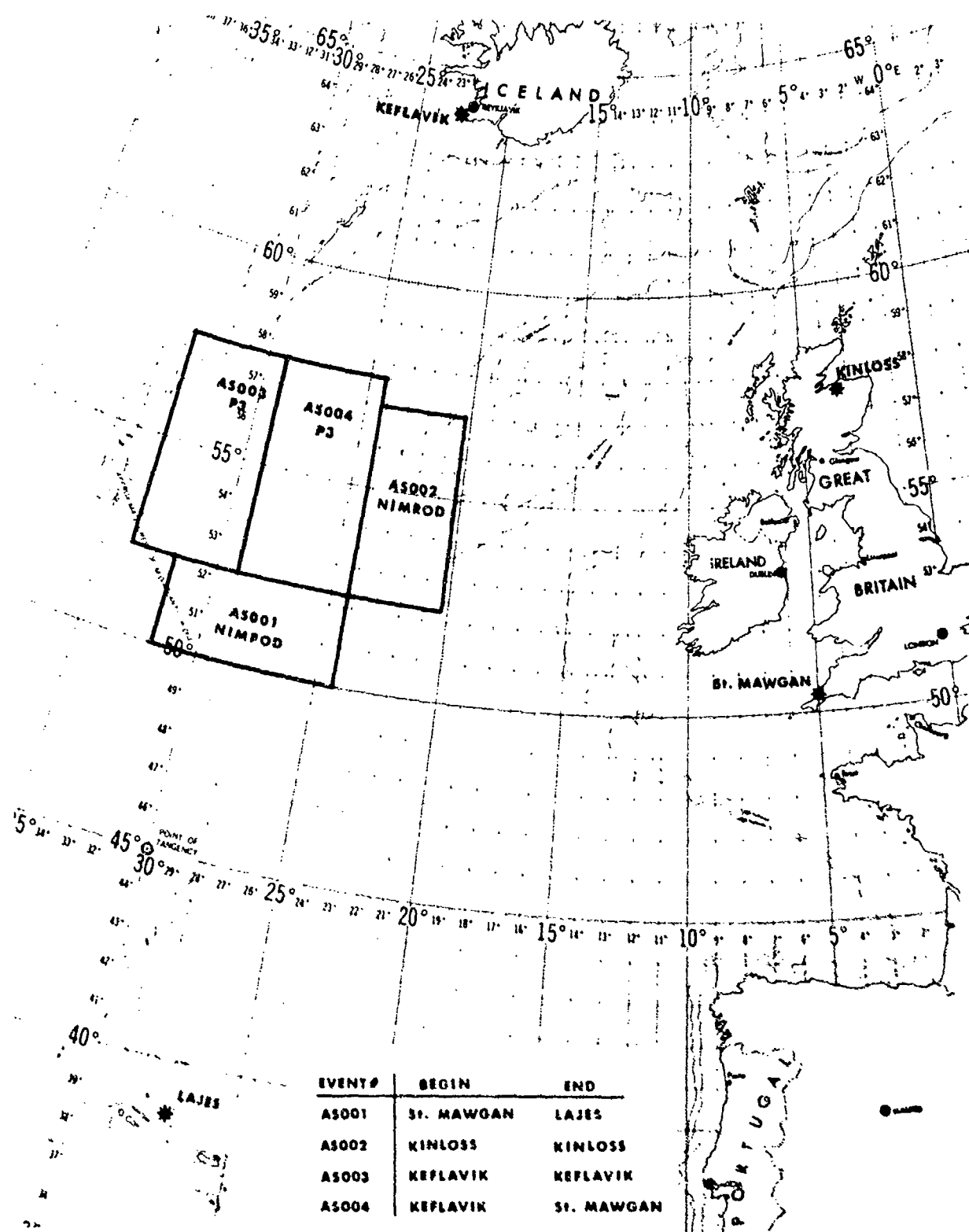


FIGURE 1(C) -- Low Flyer Operations of 6 August 73(U)

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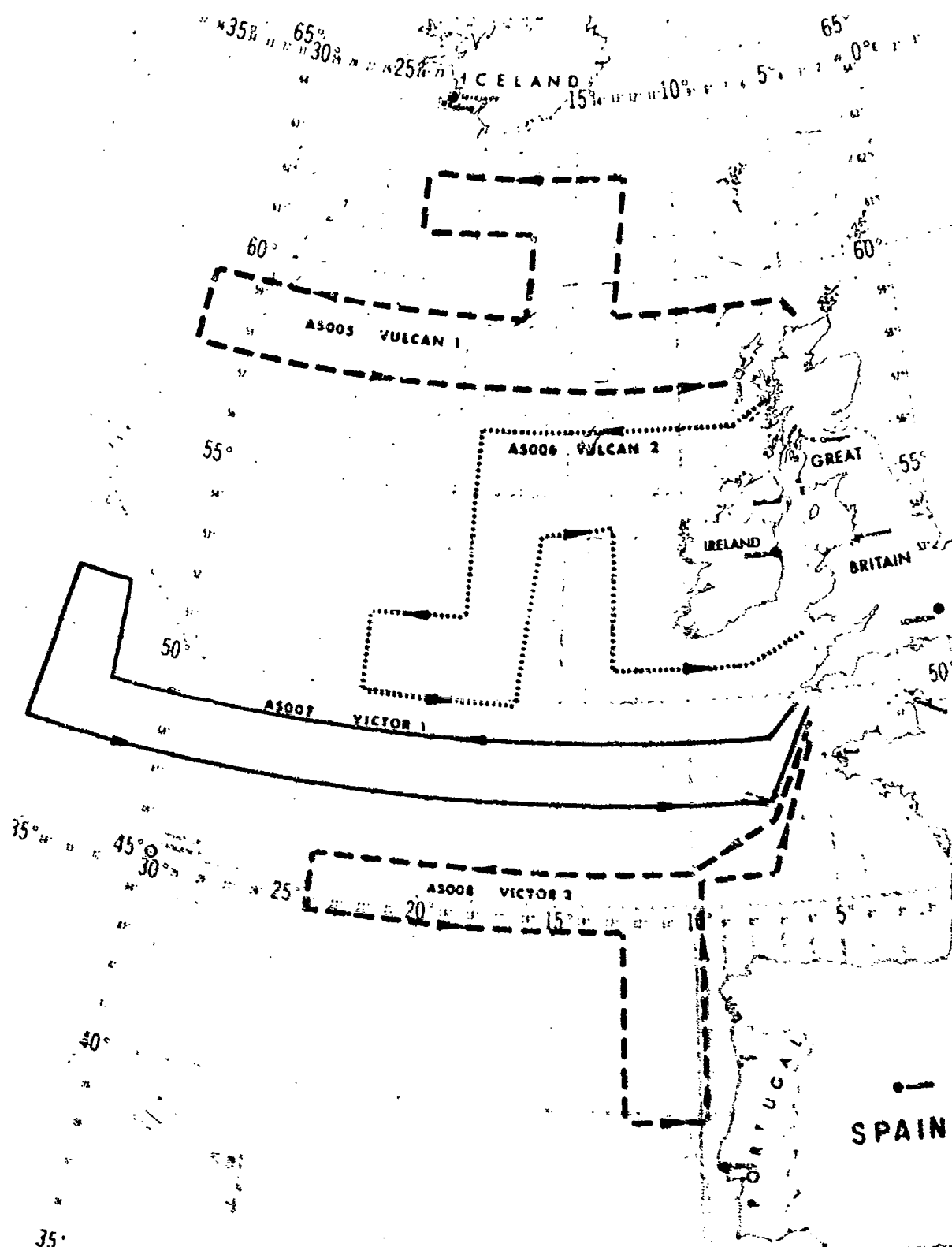


FIGURE 2(C) -- High Flyer Operations of 6 August 73(U)

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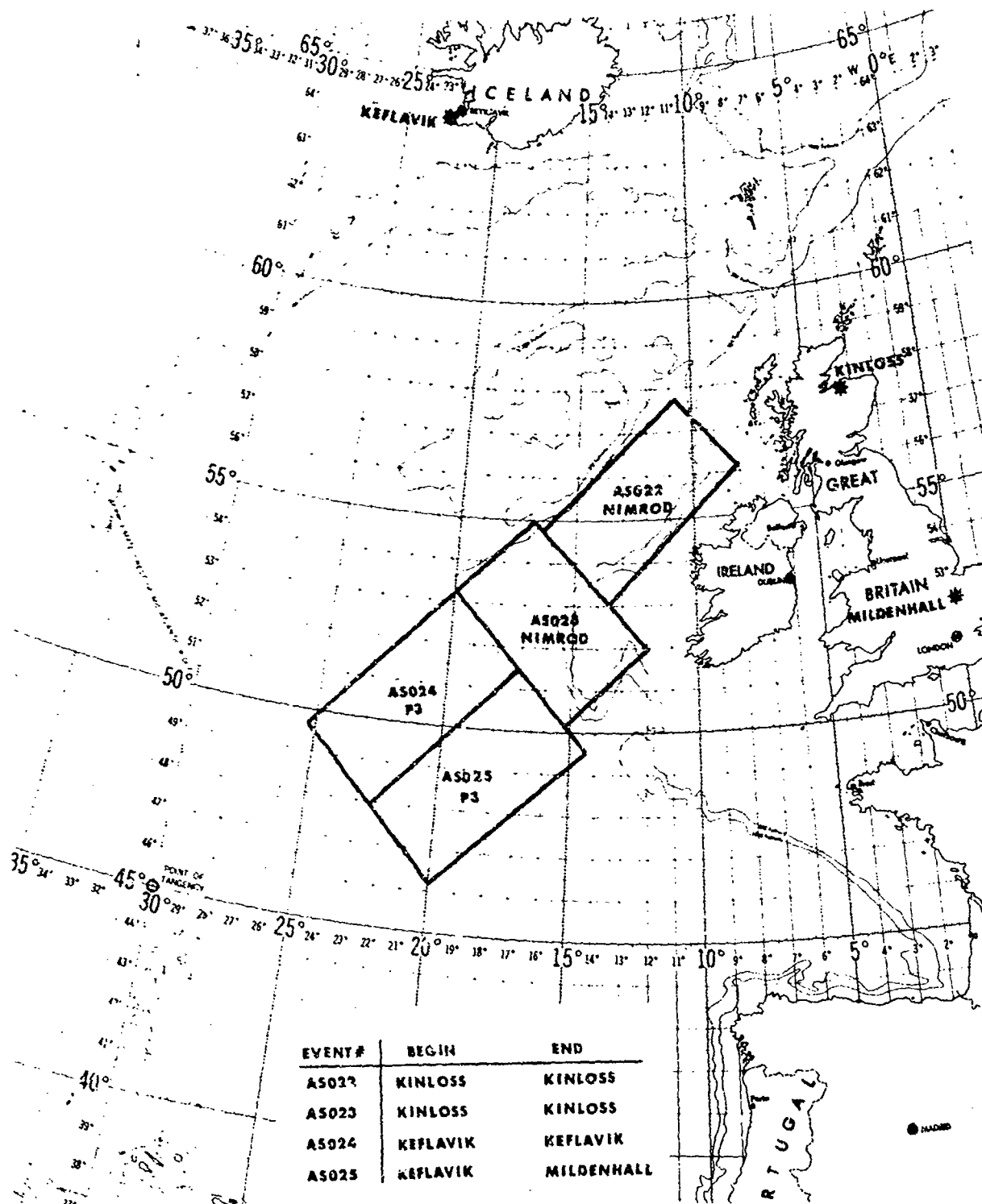


FIGURE 3(C) -- Low Flyer Operations of 21 August 73(U)

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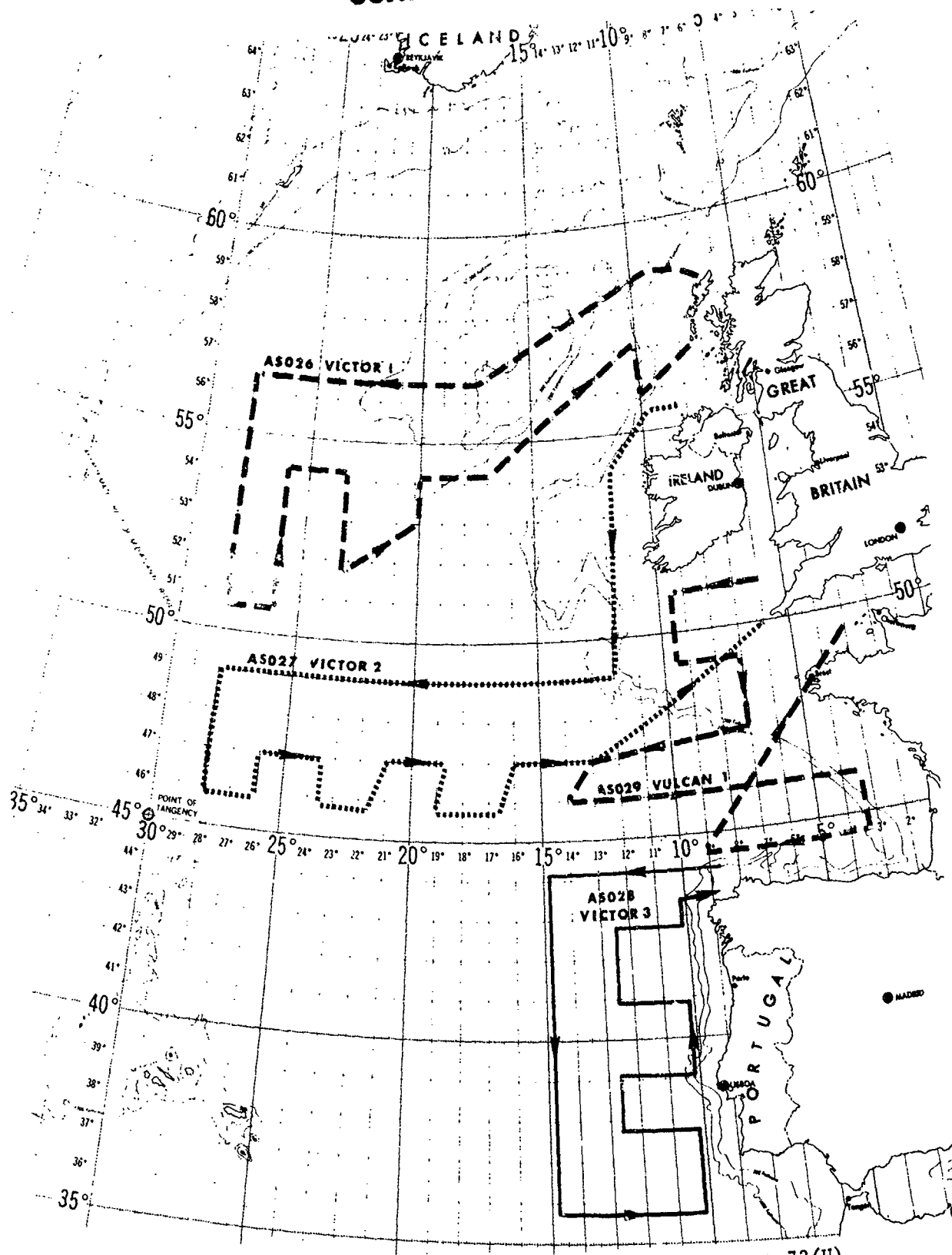


FIGURE 4(C) -- High-Flyer Operations of 21 August 73(U)

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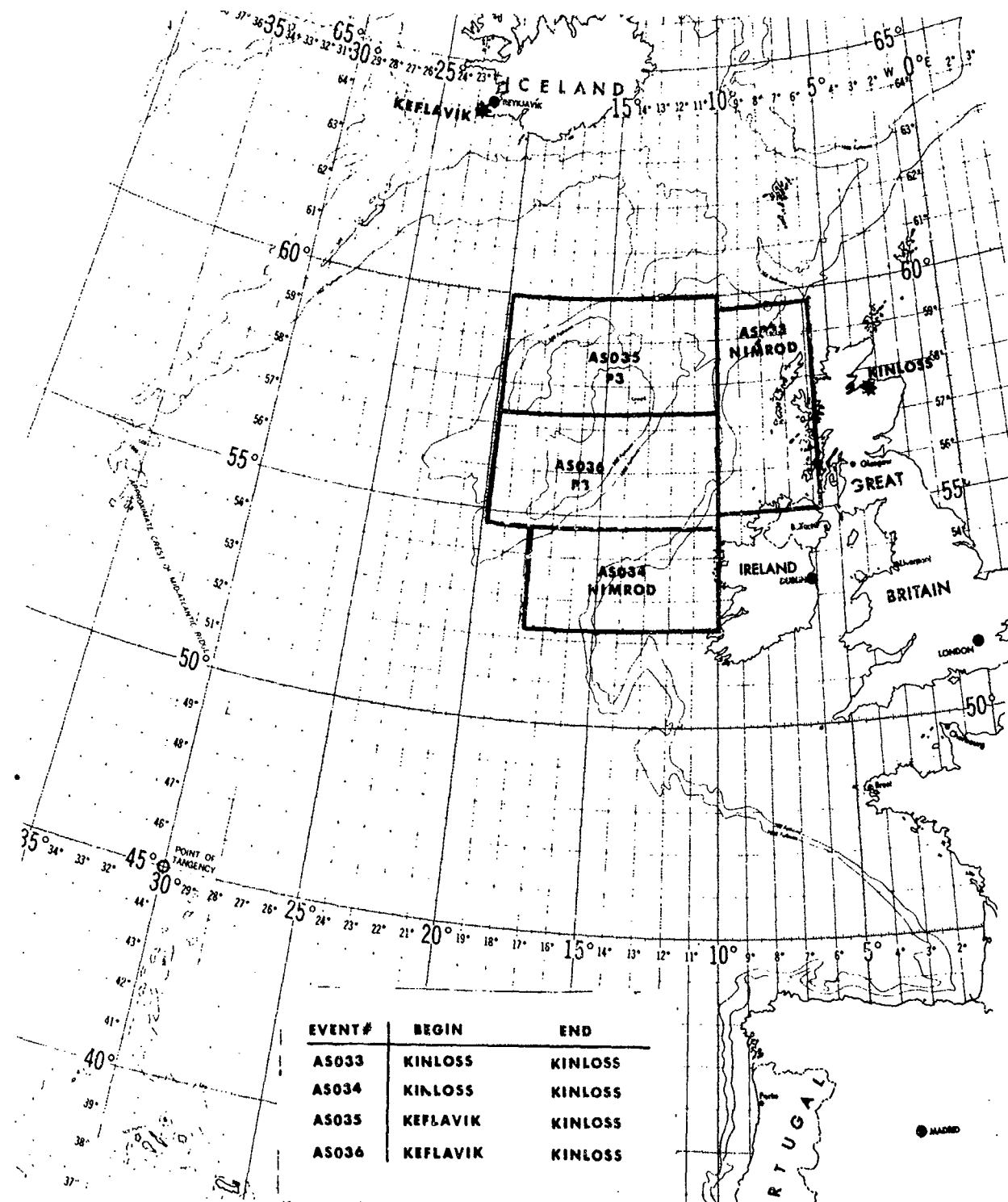


FIGURE 5(C) -- Low-Flyer Operations of 29 August 73(U)

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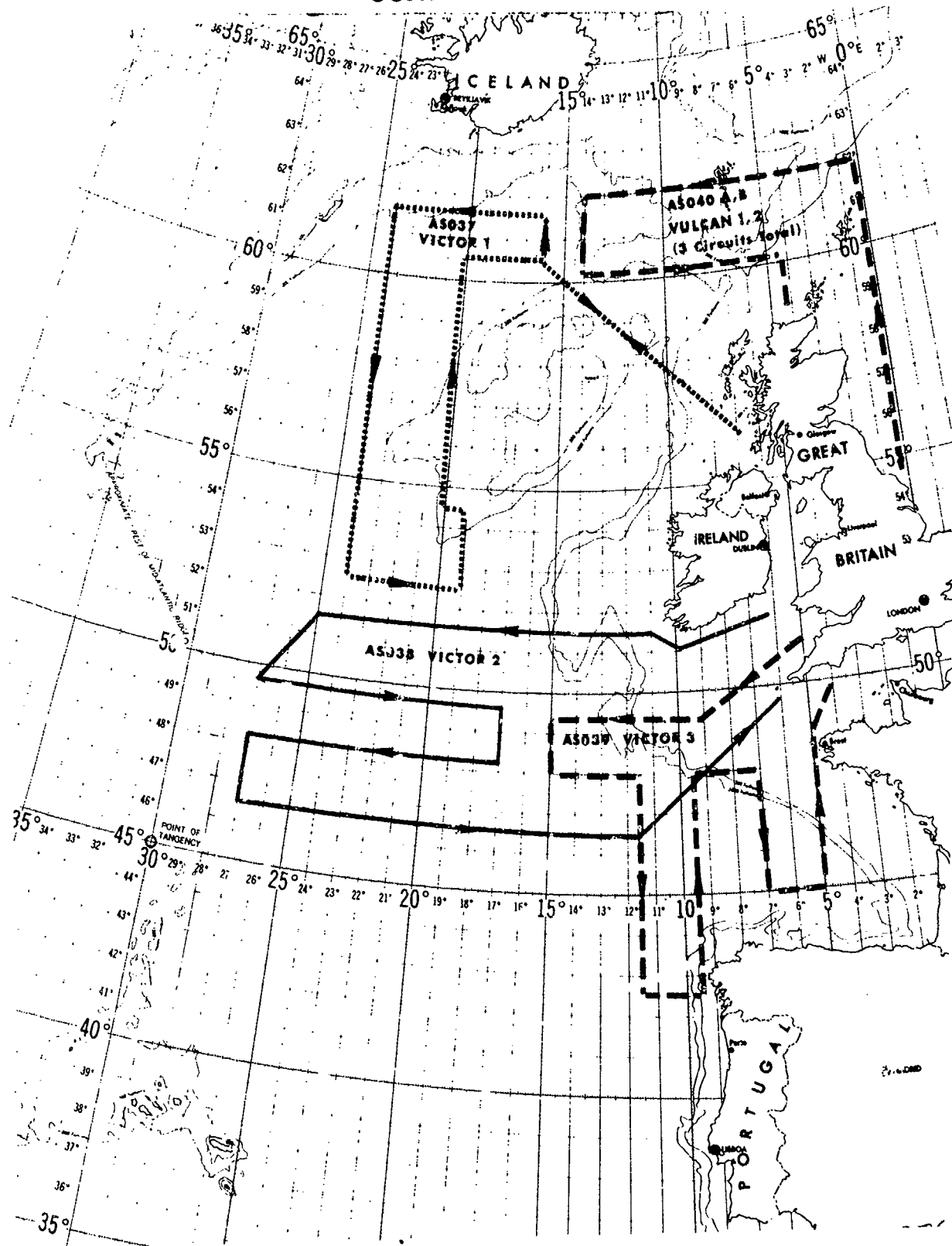


FIGURE 6(C) -- High-Flyer Operations of 29 August 73(U)

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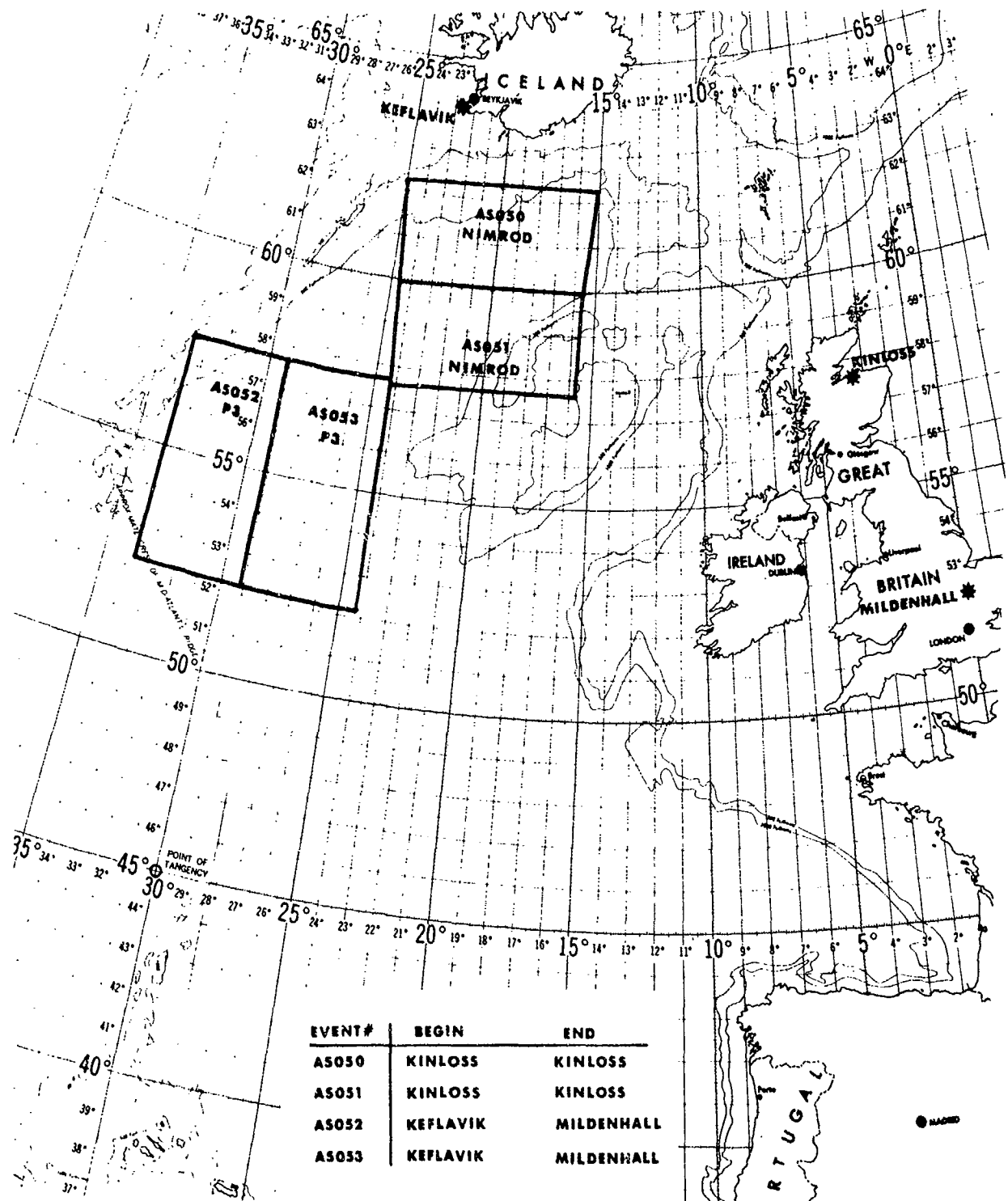


FIGURE 7(C) -- Low-Flyer Operations of 8 September 73(V)

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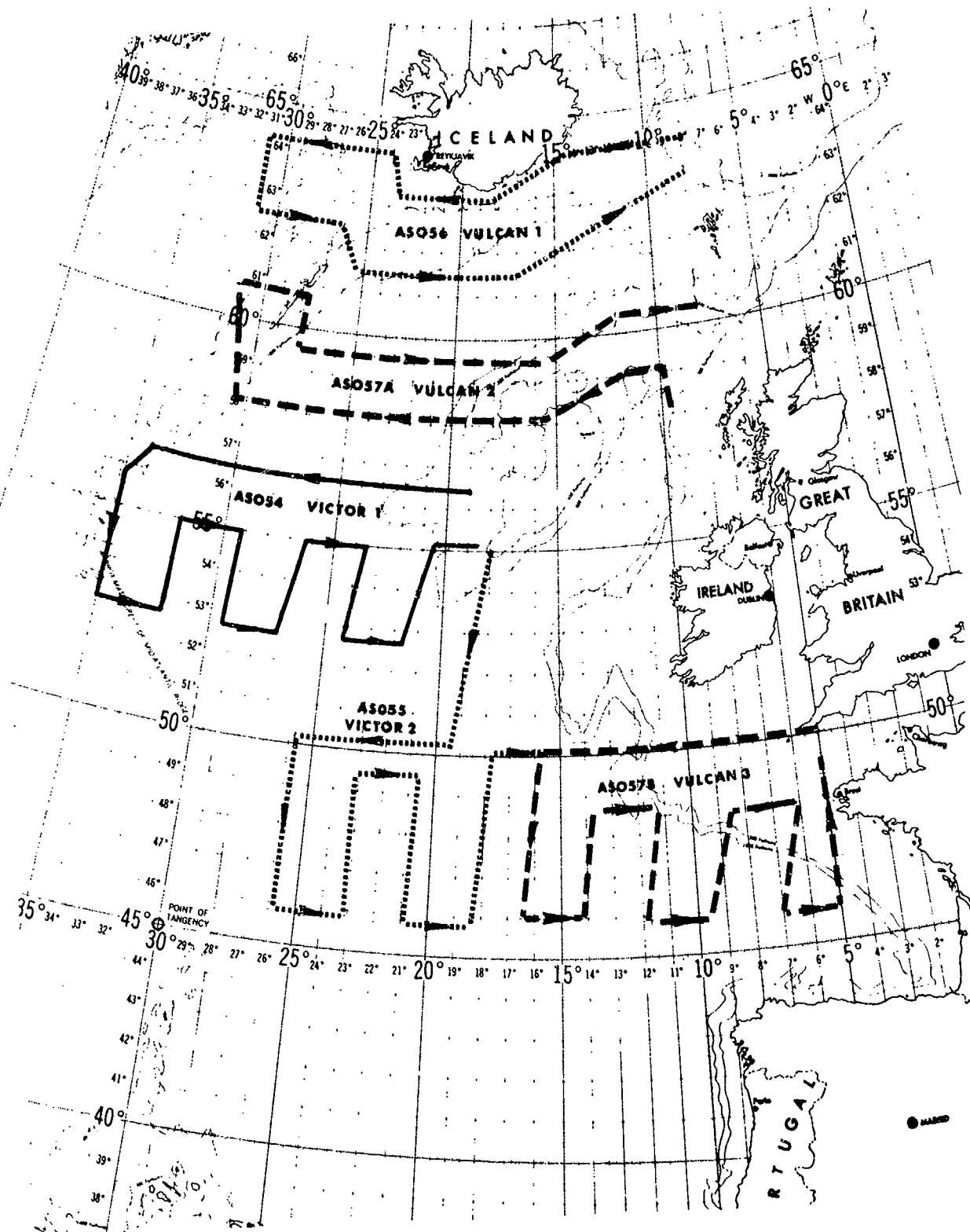


FIGURE 8(C) -- High-Flyer Operations of 8 September 73(U)

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AIRCRAFT _____ PILOT _____ OBSERVER _____ DATE _____

RADAR (RANGE SCALE, CONDITIONS) _____

Contact Designation	Time (GMT)	Ship Position Lat.	Position Long.	Comments

FIGURE 10(U) -- Ship Observation Form: RADAR ONLY TACTIC(U)

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II -- SURVEILLANCE DATA REDUCTION(U)

(C)The data obtained from shipping surveillance sorties flown during exercise SQUARE DEAL were analyzed by executing the 14 tasks shown in Figure 13. The first 12 of these tasks, discussed in the following paragraphs, produced the basic shipping results. Tasks 13 and 14 are discussed separately in Sections IV and V.

TASK 1 - REVIEW DATA PACKETS(U)

(C)The data packets from each surveillance sortie were reviewed for completeness and comprehensibility as soon after the flight as possible. Data that were checked included navigation logs, records of radar and visual detections of ships, and special forms designed for use in exercise SQUARE DEAL. Crew members were interviewed as required to clarify uncertainties in the data.

TASK 2 - RENAVIGATE AIRCRAFT TRACKS(U)

(C)The tracks flown by surveillance aircraft were recomputed after the sorties so that ship locations could be determined with greater accuracy than was possible based upon real-time, inertial navigation. This renavigation process, in the case of VICTORS and VULCANS, largely consisted of fitting smooth tracks through LORAN, TACAN, and other external fixes. Several methods of renavigating NIMROD and F-3C tracks were employed. These included the policies of (1) believing Inertial fixes, (2) believing LORAN fixes, and (3) believing the A/C returned to precisely above a marker buoy each time a "radar map"¹ was taken. After removing a few gross errors in inertial navigation, policy 1 rather consistently produced the highest quality ship tracks, and consequently is the basis of the ship locations, speeds, and courses that have been determined.

¹(U)By a "radar map" is meant the range and bearing to all contacts held at a single time.

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TASK 3 - INTERPRET RADAR FILMS(U)

(C)The radar scopes of VICTORs and VULCANs were photographed every 20 seconds during surveillance sorties. These films were reviewed after the sorties to confirm or deny the contacts recorded during the flights, to note the existence of new contacts not observed during the flights, and to determine the range and bearing to contacts with greater accuracy than was possible in real-time.

TASK 4 - ASSOCIATE CONTACTS FROM RST(U)

(C)The RST tactic, employed by the Low-Flyers over their OP areas, but not en route to or from their OP areas, results in the same ships appearing in several "radar maps". Task 4 consisted of deciding which radar contacts were caused by the same ships and, consequently, how many separate ships were in the OP Area. This association task, not trivial for areas of high shipping density, was a necessary step toward the calculation of speed and course from multiple radar detections.

TASK 5 - PLOT CONTACTS(U)

(U)For assistance in removing redundant detections from the data, contacts obtained by surveillance aircraft were plotted on large charts of the exercise area using symbols coded by time of detection and by detecting aircraft. The only attempt prior to this plotting to eliminate redundant contacts was to plot only a single contact per ship's track (the tracks having been determined in Task 4).

TASK 6 - ELIMINATE REDUNDANT CONTACTS(U)

(U)The same ships can be recorded more than once by the same or by different aircraft within the course of a surveillance day. Many such ships appeared two or more times on the plots produced in Task 5. In order that estimates of shipping density not be inflated, these plots were carefully examined and the redundant contacts removed.

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TASK 7 - DRAW AIRCRAFT TRACKS(U)

(U)Charts were prepared to illustrate the areas surveyed by each of the surveillance aircraft. These illustrations were based on the tracks actually flown by the aircraft which differed slightly from the tracks indicated by the Operation Order. Task 7 produced Figures 1-8 of this report.

TASK 8 - CALCULATE SPEED, COURSE FROM RST(U)

(C)Speeds and courses were calculated for those ships appearing as multiple radar contacts during the RST tactic employed by Low-Flyers within their Operating Areas. The association of radar contacts with individual ships was accomplished earlier in Task 4.

TASK 9 - CALCULATE SHIP LOCATIONS AT 1200Z(U)

(C)For each of the four surveillance days, the locations at 1200Z (GMT) were calculated for those ships for which speed and course estimates were possible. Speed and course, as determined from the multiple radar contacts of the RST tactic, were preferred for this purpose. Visual estimates of speed and course, as result from the VST tactic, were used as necessary.

TASK 10 - GENERATE TABLES OF SHIP LOCATIONS(U)

(U)Tables showing the locations of ships in and around the exercise area were prepared for each of the four surveillance days. Ship locations were projected to 1200Z whenever possible and otherwise correspond to the times of detection. Also contained in the tables are the times associated with the locations, indications of ship sizes, identifiers of detecting aircraft, and *s to indicate that further information can be found in related tables.

TASK 11 - GENERATE TABLES OF SHIP ATTRIBUTES(U)

(U)Information beyond that contained in the Ship Location Tables is available for many of the ships surveyed by NIMRODs and P-3Cs. Ship Attribute Tables have been prepared to contain such information as name, nationality, type, and various determinations of speed, course, and length.

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TASK 12 - GENERATE SHIP COUNTS (1° x 1°)(U)

(U) For each of the four surveillance days, the number of ships known to be present in each 1° x 1° cell of the exercise area was determined and displayed on charts. Also indicated on these charts are those 1° x 1° cells judged to be fully surveyed, based on considerations of aircraft tracks, radar ranges, equipment failures, and weather conditions.

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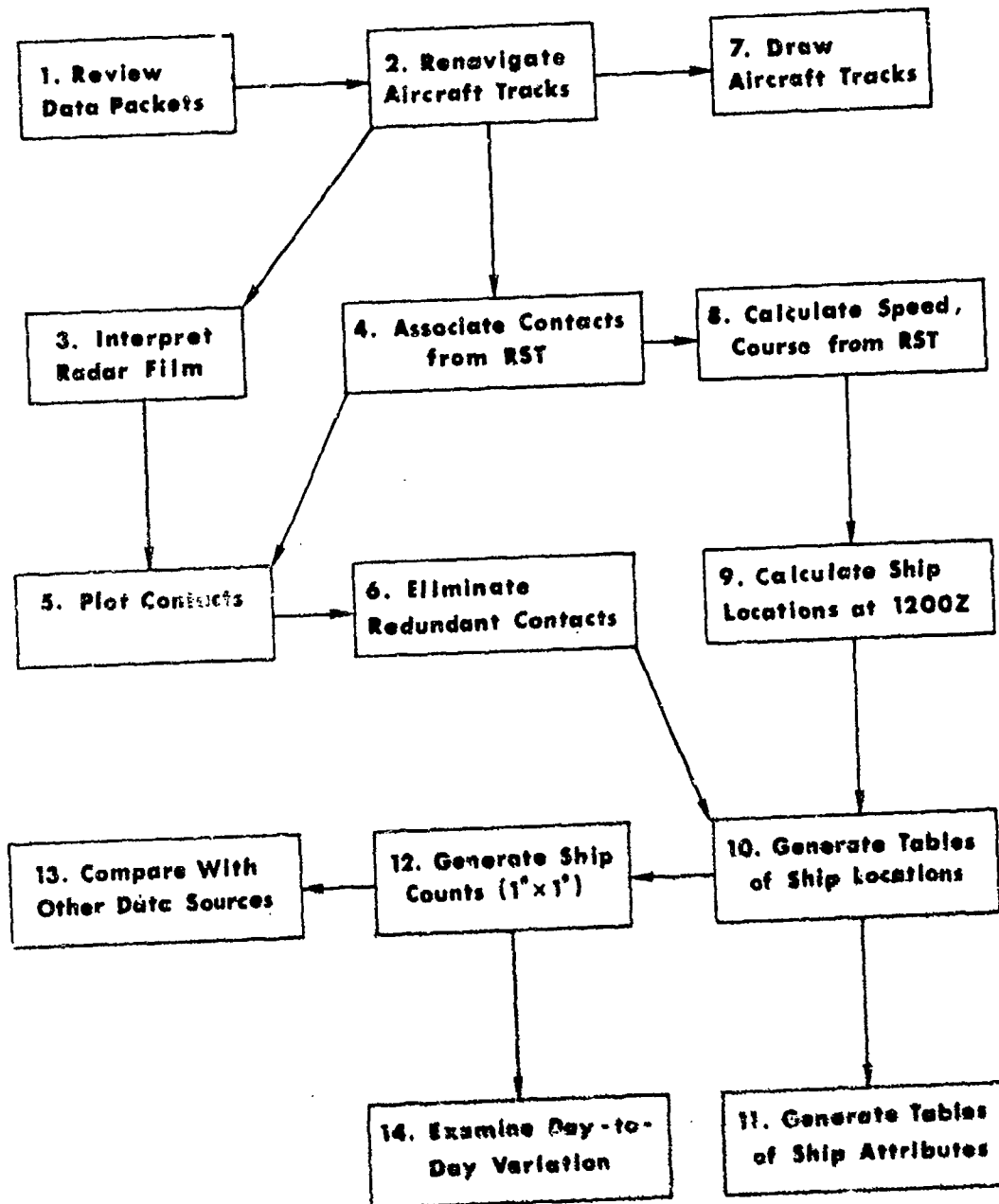


FIGURE 13(U) -- Reduction of Shipping Data(U)

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III -- SHIPPING DENSITY SUMMARY(U)

(U)The ship counts in 1° x 1° cells for each of the four days of shipping surveillance are shown in Figures 14-17. Note that each cell has been judged to be either (1) fully surveyed in which case the count represents a complete sample of the cell's ship population or (2) partially surveyed in which case a complete sample is unavailable and the count shown is merely the lower bound of the cell's population. This judgment was based upon considerations of aircraft tracks, sensor performance, and weather conditions.

(U)A summary of the surveillance results is shown in Table 2. The locations of the 2577 ships, and the additional information available for 147 of these ships, are shown in tabular form in the Appendix of this report.

TABLE 2(U)
Summary of Ship Counts(U)

	Total	In 1°x1° Cells Fully Surveyed	Further Information Available
6 August 73	583	525	26
21 August 73	899	874	41
29 August 73	644	582	56
8 September 73	451	397	24
TOTAL	2577	2378	147

(U)At the present time, it is difficult to assess the accuracy of ship counts, positions, courses, and speeds as determined from aerial surveillance. For this purpose, it would be helpful to compare the results reported here with the logs of exercise vessels. Although this has not yet been done in any formal way, it is known that certain discrepancies exist.

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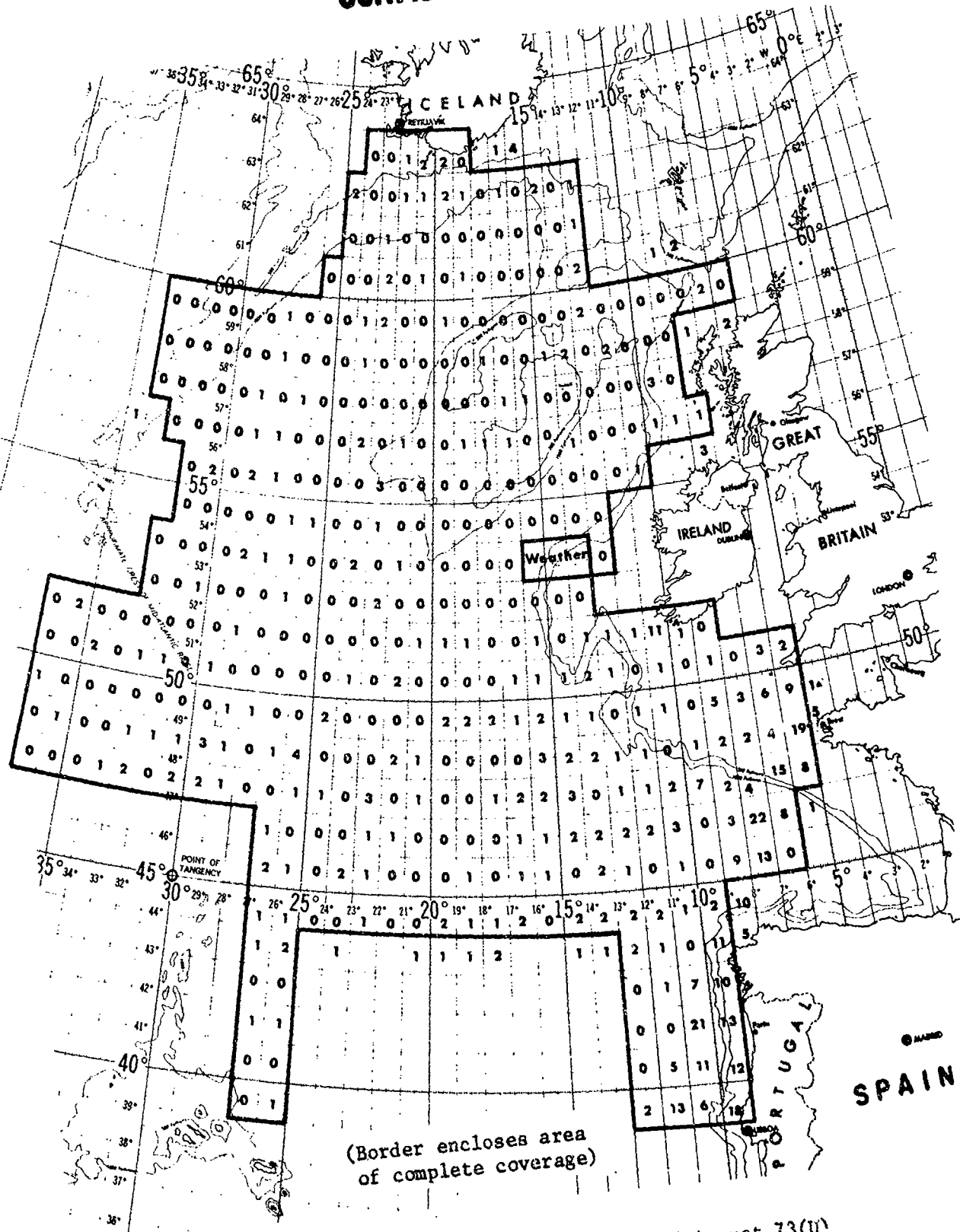


FIGURE 14(C) -- Ship Counts on 6 August 73(U)

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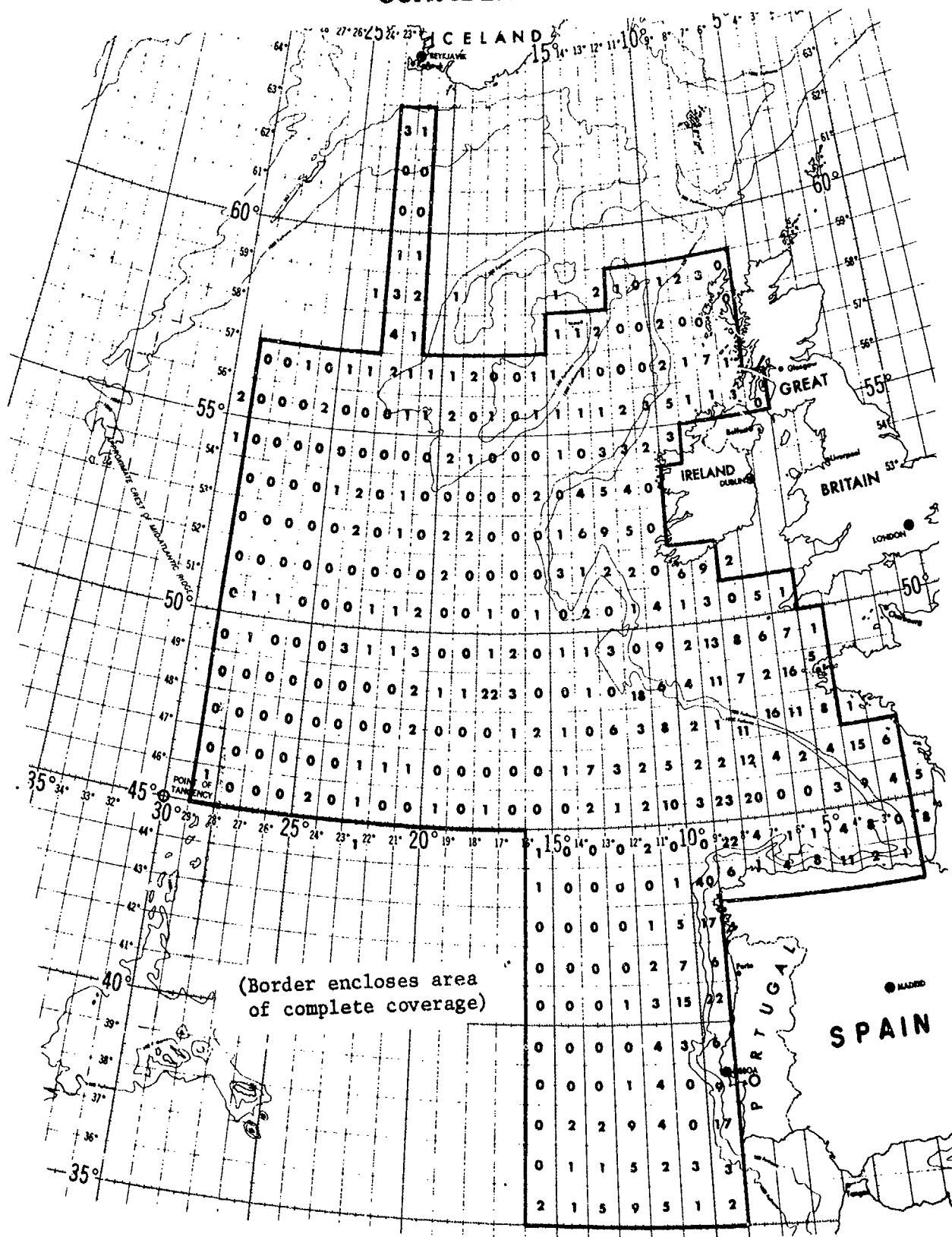


FIGURE 15(C) -- Ship Counts on 21 August 73(U)
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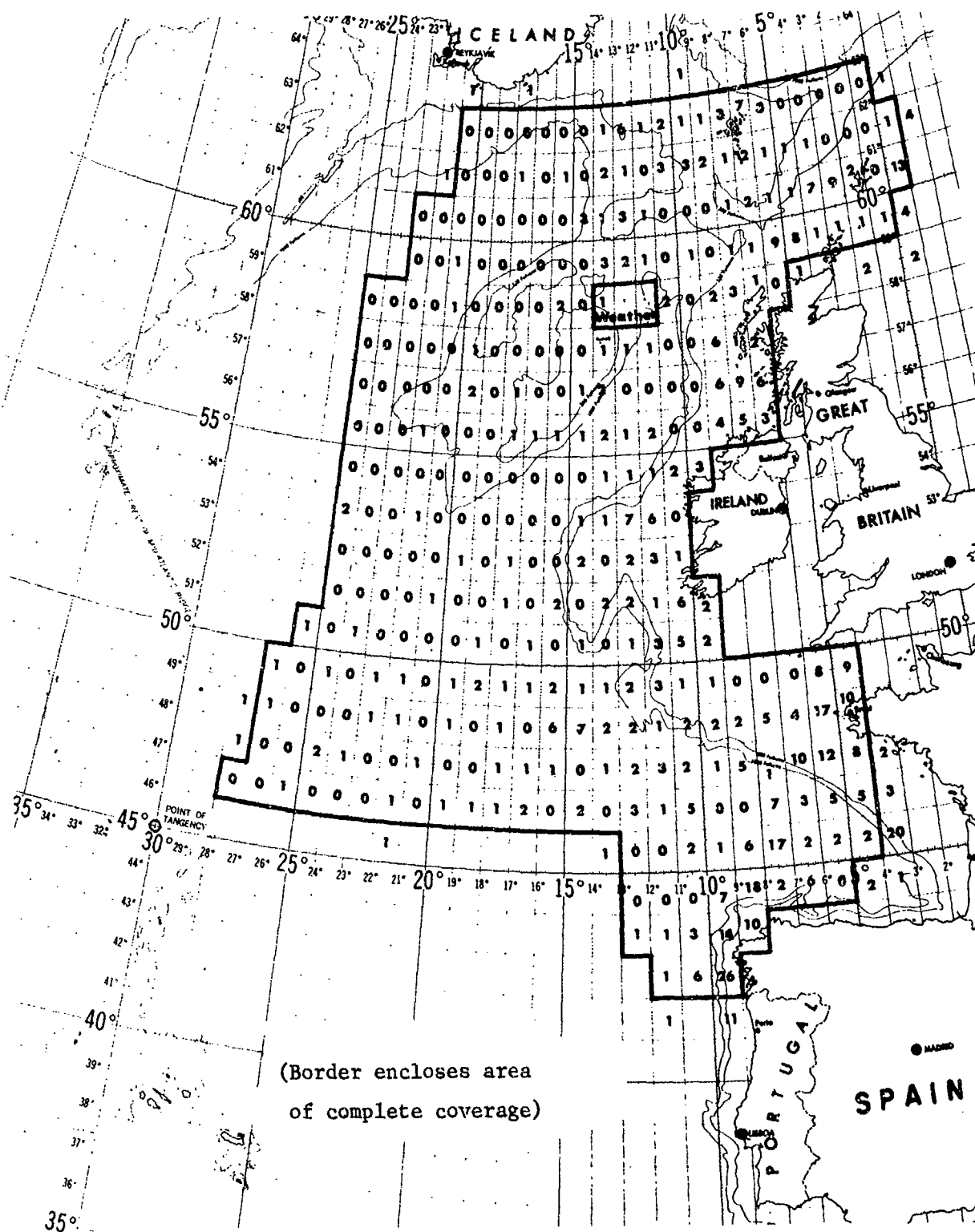


FIGURE 16(C) -- Ship Counts on 29 August 73(U)

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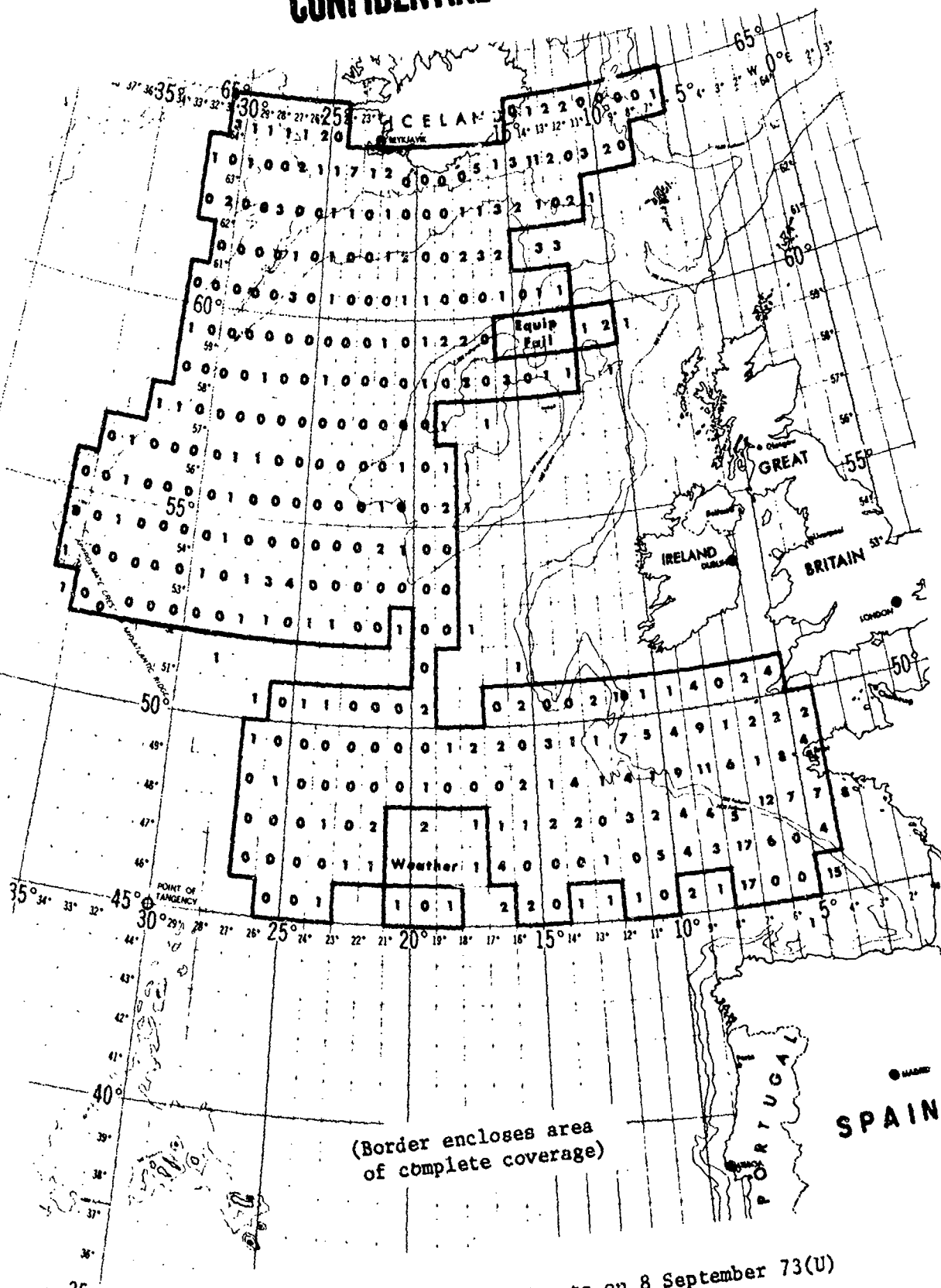


FIGURE 17(C) -- Ship Counts on 8 September 73(U)
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IV -- COMPARISON WITH OTHER DATA SOURCES(U)

(U) This section contains a comparison of the shipping densities found in Exercise SQUARE DEAL with those available from three other sources of shipping data.

OTHER SOURCES(U)

(U) The data herein referred to as EASTLANT data were gathered during the EASTLANT II Exercise in August 1972 under the sponsorship of LRAPP. These data were provided by ASW patrol aircraft using surveillance methods similar to those used by the NIMROD and P-3Cs in Exercise SQUARE DEAL. More detail can be found in reference 1.

(U) The data herein referred to as AMI data were taken from Figure 16 of reference 2. These data originally appeared as a World Meteorological Organization plot of merchant shipping as of 12 June 64 and were extracted from arrival and departure information from sources such as Lloyd's Shipping Index and Lloyd's List. The data appearing here have been updated to account for the closing of the Suez Canal and the increase in ship population, and are considered most applicable to 1970.

(U) The data herein referred to as Census data were taken from an actual census of the number of merchant ships that passed designated areas at 12 noon on typical summer days in the 1960's (See Figure 5-3, reference 3). Note that both the AMI data and the Census data might be expected to exclude some fishing vessels and vessels in coasting trades.

¹EASTLANT Shipping Densities, Raff Associates, Inc., 27 Feb 73, UNCLASSIFIED.

²National and International Merchant Vessel Population and Distribution: Present and Forecast, Automated Marine International, 15 Sept. 70, UNCLASSIFIED.

³P-499 Data Management System Analysis(U), Vol I - Summary Report, Auerbach Corp., 1 Nov 67, SECRET.

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DATA REDUCTION(U)

(U)Charts were prepared of the average ship counts within $1^{\circ} \times 1^{\circ}$ cells found in Exercises SQUARE DEAL and EASTLANT II (see Figures 18 and 19). The counts shown on these charts are the averages of either 1, 2, 3, or 4 samples of the cells (There were four surveillance days during each exercise).

(U)The AMI data and the Census data both exist as counts in $5^{\circ} \times 5^{\circ}$ cells. Consequently, the SQUARE DEAL and EASTLANT data were converted to this same format (see Figures 20 and 21). Those $5^{\circ} \times 5^{\circ}$ cells are shown in Figures 20 and 21 which were fractionally covered by as much as .60 in Figures 18 and 19. The counts in those cells of Figures 20 and 21 which were less than fully covered were estimated by dividing the counts of Figures 18 and 19 by the fractional coverage. The fractional coverage of these cells is shown parenthetically in Figures 20 and 21.

(U)The set of $5^{\circ} \times 5^{\circ}$ cells covered by SQUARE DEAL or EASTLANT (or both) was identified, and the ship counts from the AMI data and the Census data were entered in these cells (see Figures 22 and 23).

(U)Figures 19-23 were compared and the number of cells common to the various pairs of data sources were noted (see Table 3). The numbers of ships within the common areas were determined and entered in Table 4.

CONCLUSIONS(U)

(U)It is clear from an examination of Table 4 that the ranking of the four data sources according to shipping density is

1. AMI
2. SQUARE DEAL
3. Census
4. EASTLANT

Furthermore, the amount of variation among the sources is considerable.

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(U)The large ship population indicated by the AMI data is largely caused by the heavy densities (much greater than in any other data source) reported off the coast of Spain. This is surprising in view of the fact that the methodology behind the AMI data might have been expected to exclude some fishermen and coastal vessels.

(C)No explanation could be found, either in the conduct of the exercise or in the method of data reduction, to account for the low densities reported in Exercise EASTLANT II. The EASTLANT data are particularly surprising compared with those of SQUARE DEAL which was held almost exactly one year later and which employed similar surveillance methods.

(C)EASTLANT and SQUARE DEAL both show considerably less traffic between 45°-50°N and west of 15°W than AMI and Census. This region contains much of the shipping between East Coast US ports and the English Channel and French ports.

(C)SQUARE DEAL shows much greater shipping density between Iceland and Great Britain than do the AMI and Census data. This may be largely due to the fishing vessels included in the SQUARE DEAL data but excluded from the AMI and Census data. It may also be partly due to increased merchant and naval traffic in the Iceland/UK gap.

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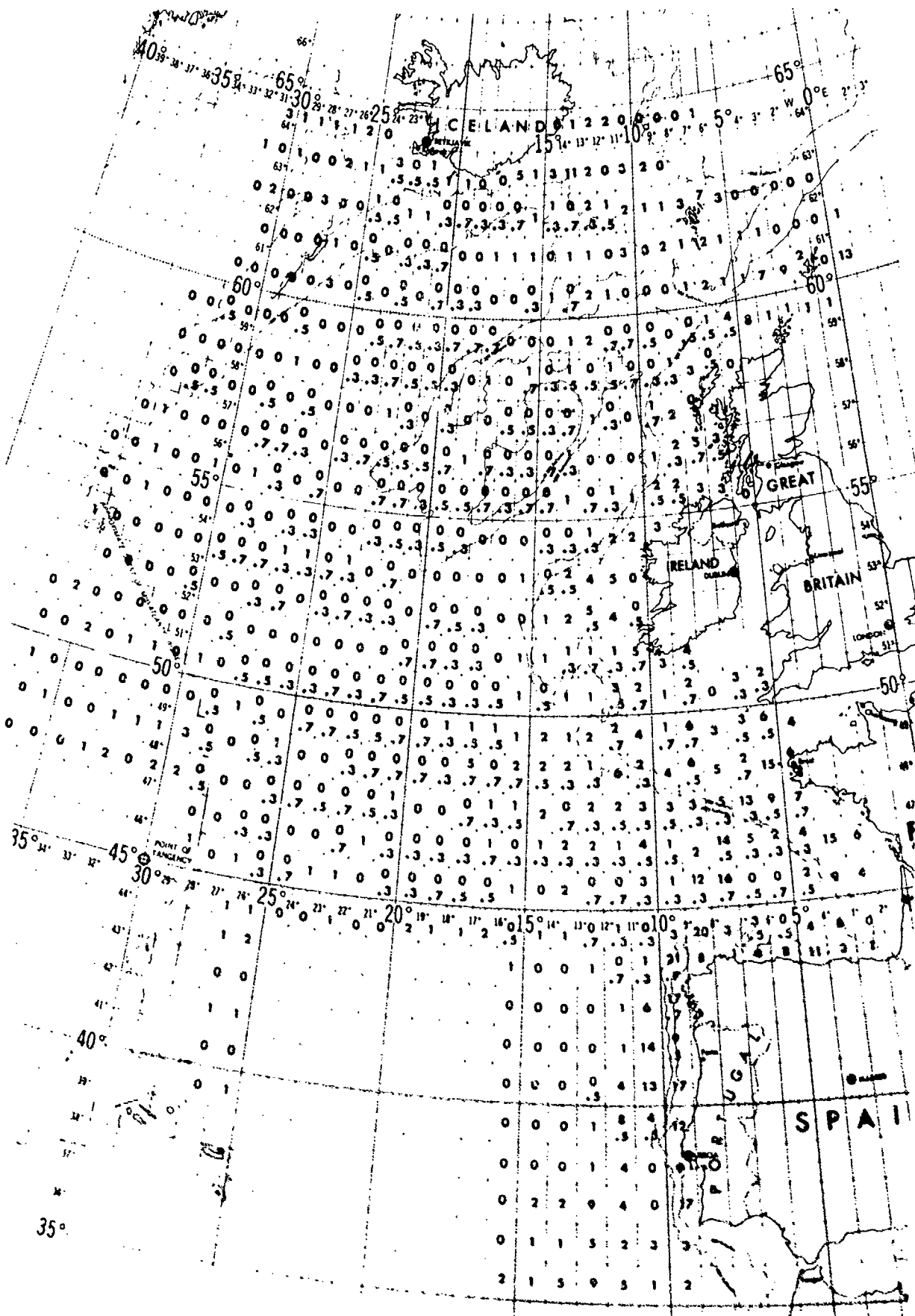


FIGURE 18(C) -- Average Ship Counts During
SQUARE DEAL (1° x 1°)(U)

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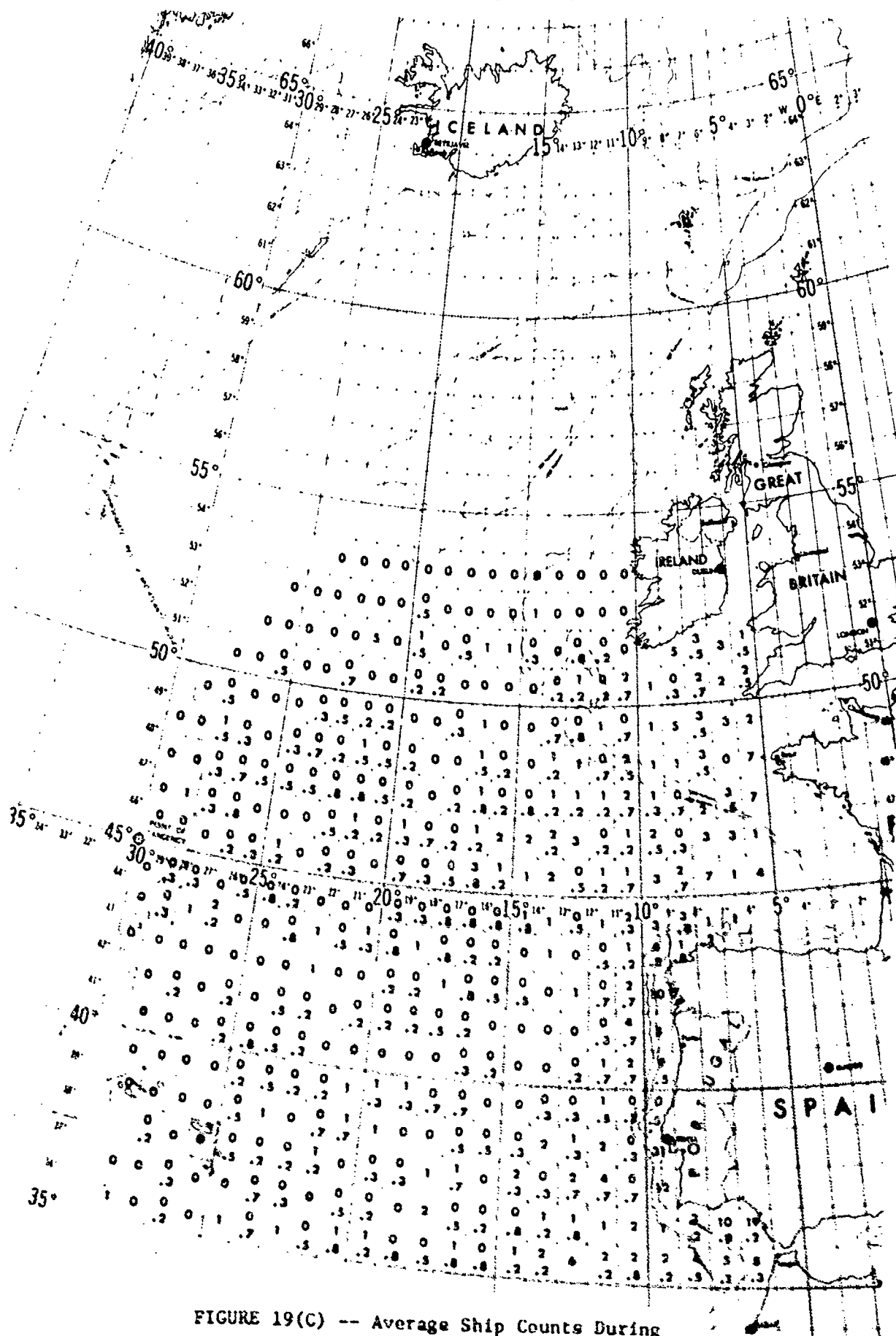


FIGURE 19(C) -- Average Ship Counts During
EASTLANT (1° x 1°)(U)

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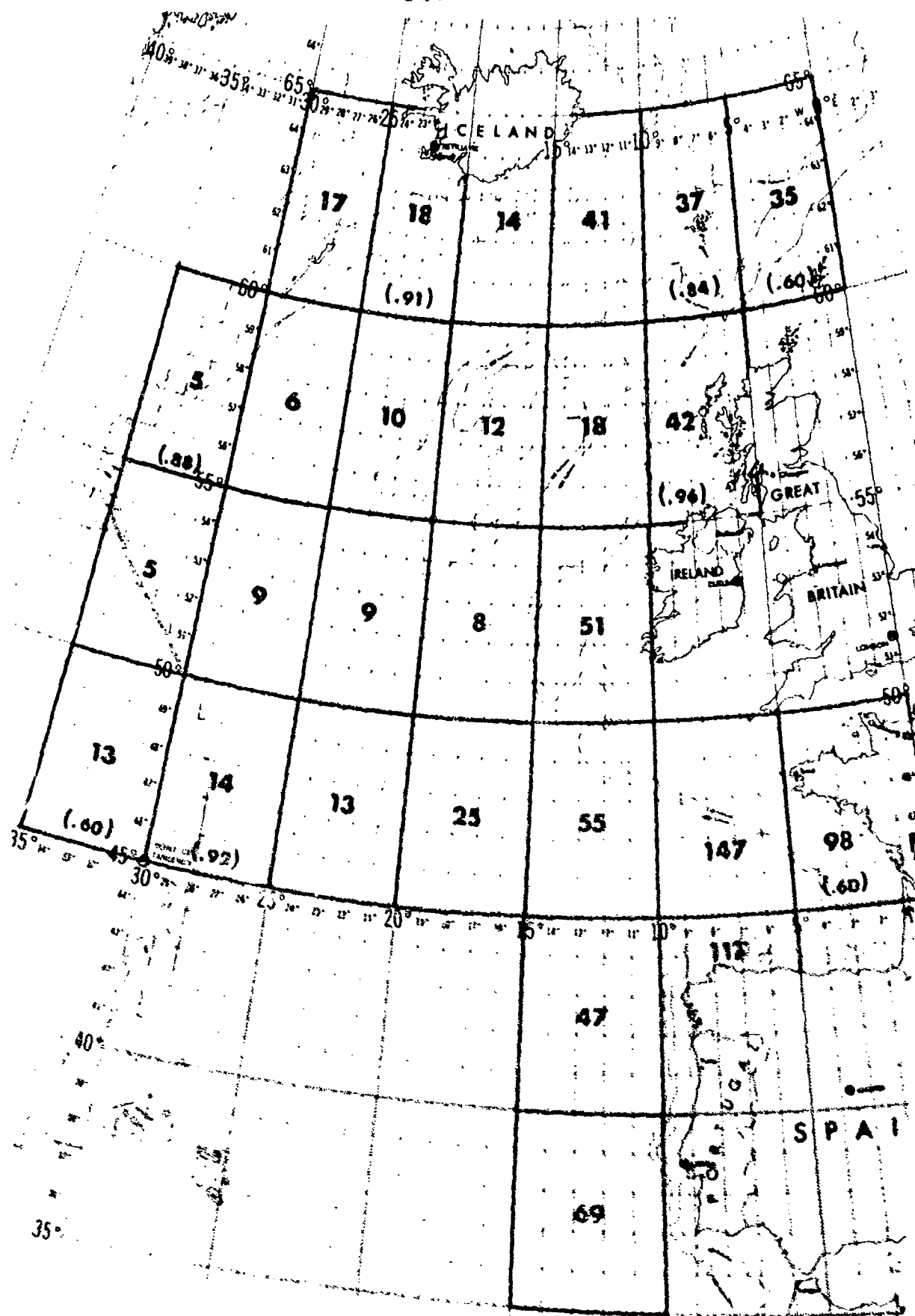


FIGURE 20(C) — Average Ship Counts During Square Deal (5° x 5°)(U)

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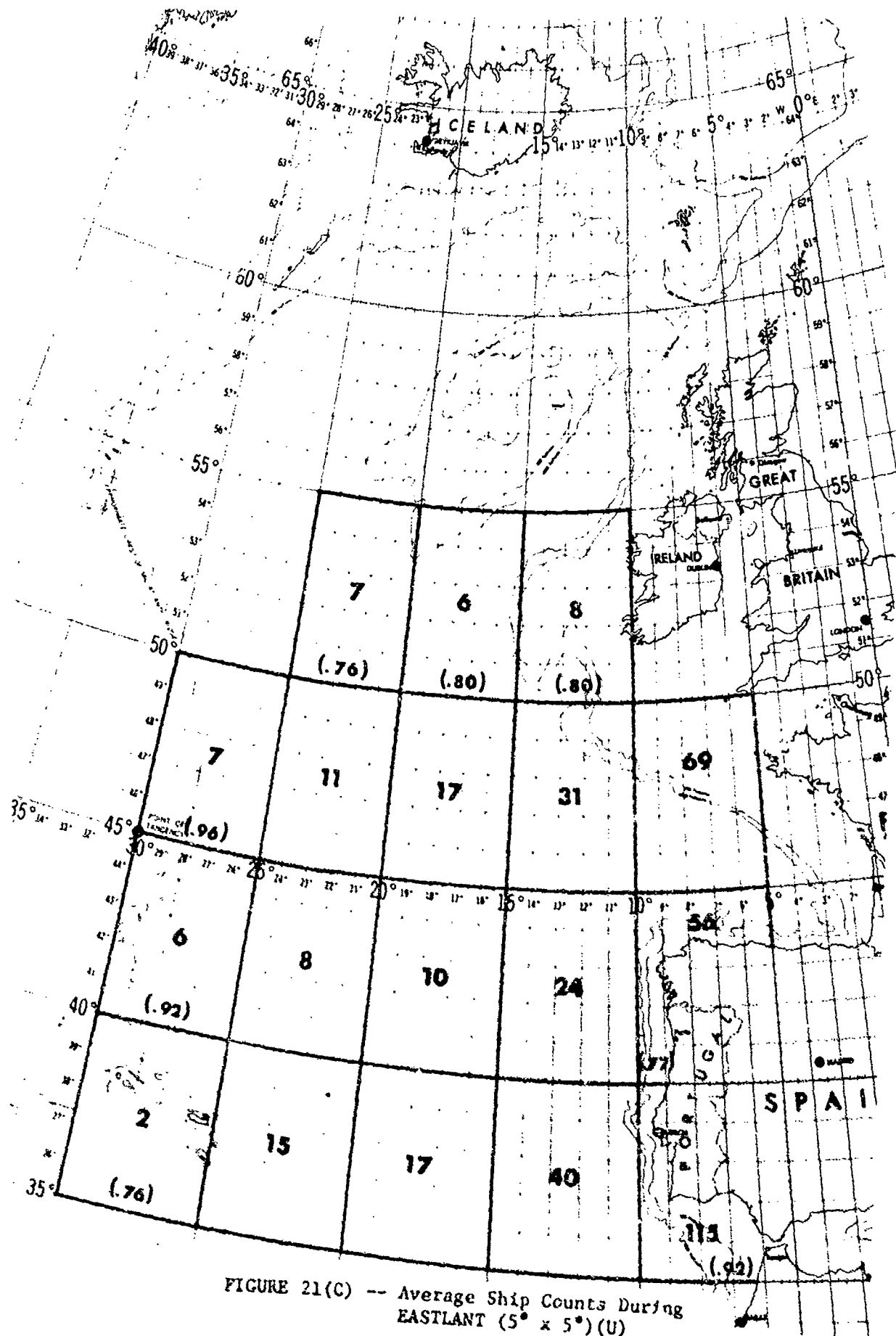


FIGURE 21(C) -- Average Ship Counts During
EASTLANT (5° x 5°) (U)

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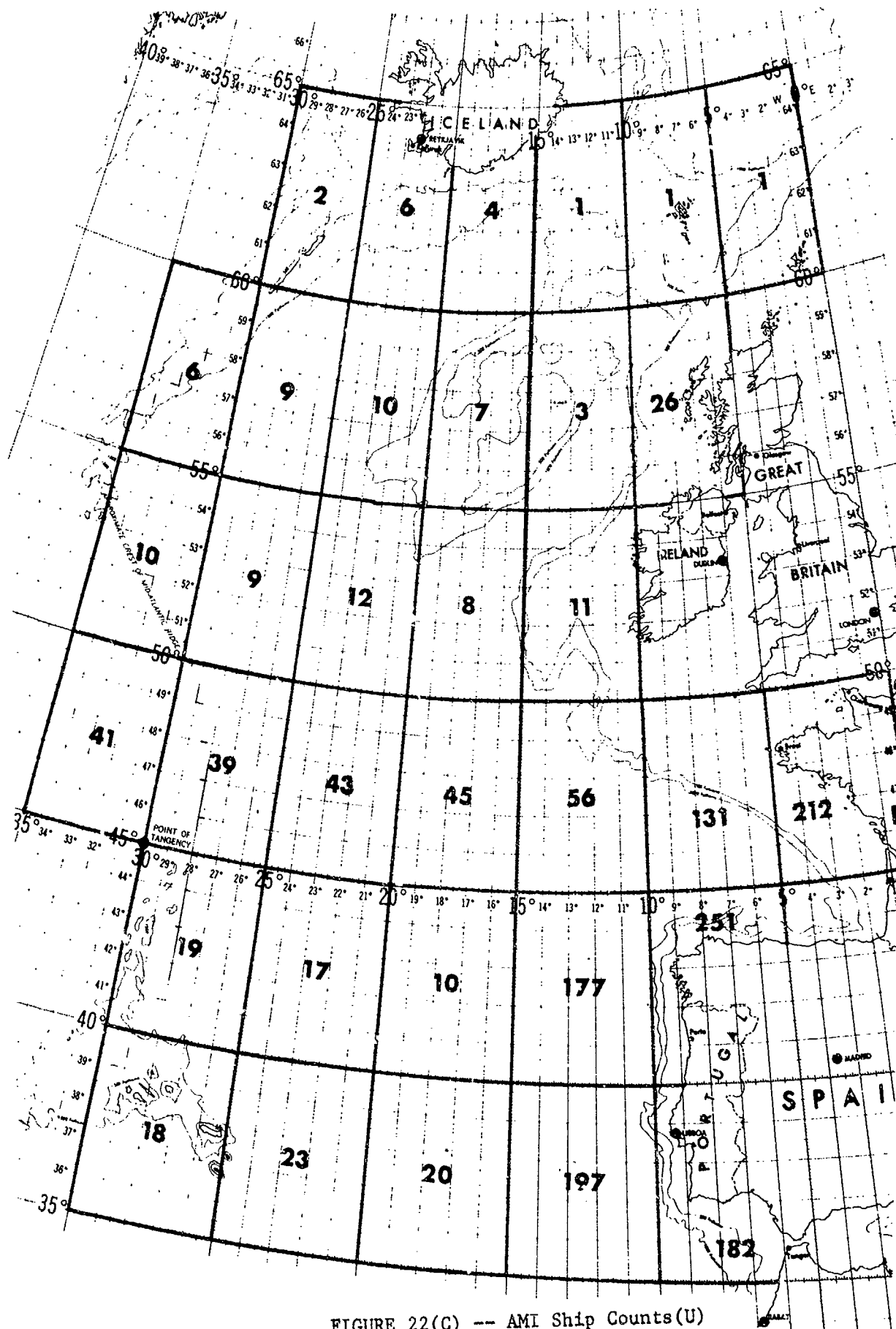


FIGURE 22(C) -- AMI Ship Counts(U)

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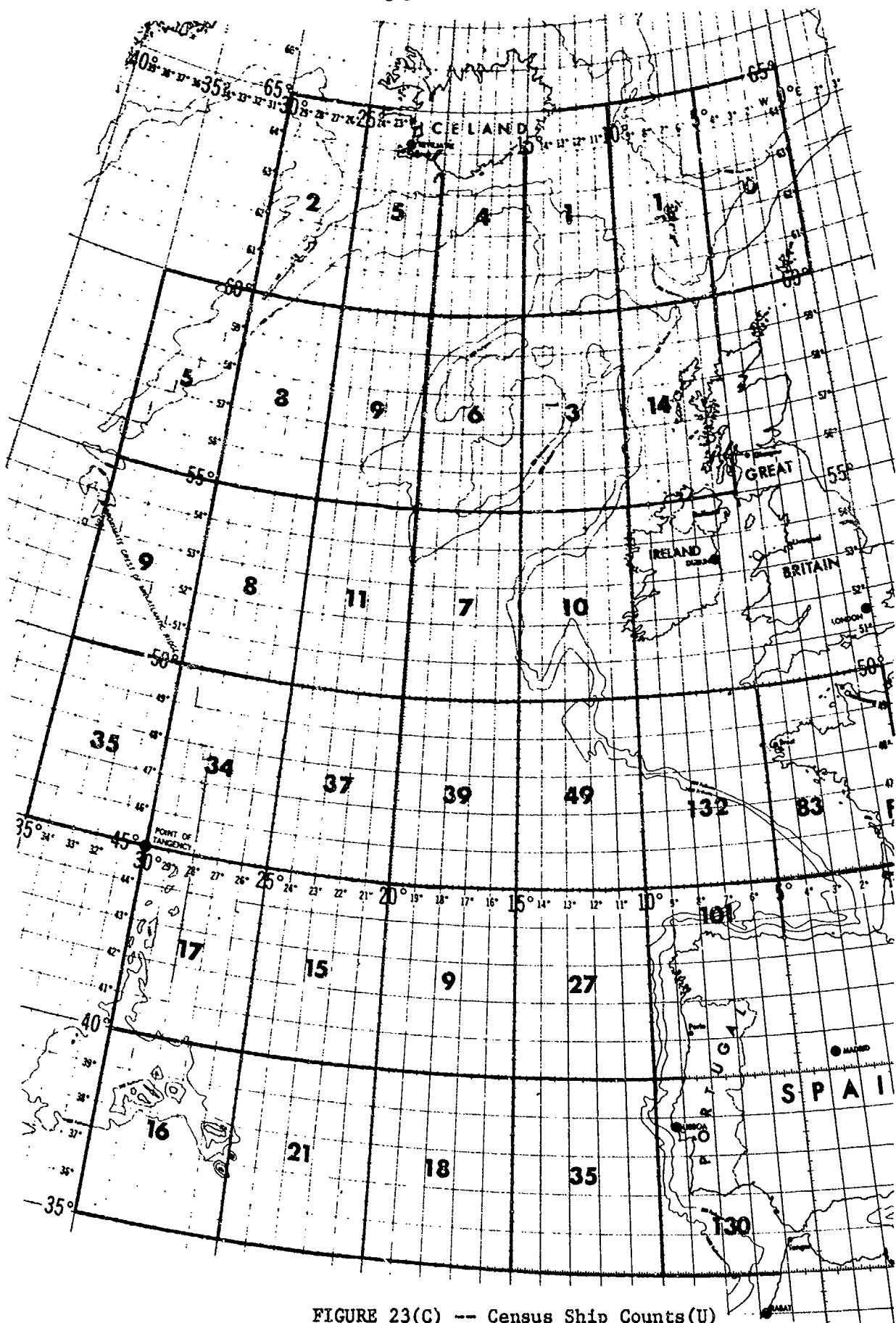


FIGURE 23(C) -- Census Ship Counts(U)

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TABLE 3(C)

Number of 5° x 5° Cells Common to the Data Sources(U)

	SQUARE DEAL	EASTLANT	AMI	CENSUS
SQUARE DEAL	27	11	27	27
EASTLANT	11	18	18	18
AMI	27	18	34	34
CENSUS	27	18	34	34

TABLE 4(C)

Number of Ships in Common Cells(U)

	SQUARE DEAL	EASTLANT	AMI	CENSUS
SQUARE DEAL	935 935	276 555	1318 935	675 935
EASTLANT	555 276	449 449	1259 449	708 449
AMI	935 1318	449 1259	1607 1607	901 1607
CENSUS	675 935	708 449	901 1607	901 901

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V -- SHIPPING VARIATIONS DURING SQUARE DEAL(U)

INTRODUCTION (U)

(U)The total number of ships detected on each of the four days of shipping surveillance is shown in Table 5.

TABLE 5(C)

Ship Counts During Exercise SQUARE DEAL(U)

<u>6 Aug</u>	<u>21 Aug</u>	<u>29 Aug</u>	<u>8 Sept.</u>	<u>Total</u>
583	899	644	451	2577

(U)The rather large day-to-day variation, together with the fact that the weather was much the best on 21 Aug, has raised the issue of whether the ship counts obtained on the other three days are trustworthy. Consequently, in this section we strive to answer two questions:

1. It is reasonable to attribute the day-to-day variation in ship counts solely to randomness?
2. If not, or if the answer is unclear, then what was the cause of the variation? Three possibilities have been suggested:
 - a. The variation in ship counts was largely due to the different areas of coverage on the four days of shipping surveillance.
 - b. Many ships remained in port, or at least did not enter the area of shipping surveillance, during periods of bad weather. In this case, we would accept the ship counts as substantially correct.
 - c. The surveillance methods employed were inadequate during periods of bad weather. In this case, the surveillance results for 6 Aug, 29 Aug, and 8 Sept would be doubtful.

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THE POISSON DISTRIBUTION (U)

(U) Before proceeding further, a few remarks should be made concerning the Poisson distribution. It is sometimes suggested that the number of ships within a specified area should be a sample from the Poisson distribution. That is, if the number of ships within the area were counted many times, the resulting counts would follow the distribution

$$f_n = \frac{\lambda^n e^{-\lambda}}{n!}$$

where f_n is the probability that exactly n ships are present and λ is both the mean and variance of the distribution. This distribution is a consequence of the underlying belief that ships operate independently, that the probability of a certain ship being in an area is independent of the locations of all other ships. However, if ships have a tendency to cluster, a form of behavior perhaps typified by fishing boats, then ship counts within an area would not be Poisson distributed, but would exhibit a variation greater than that associated with a Poisson distribution.

(U) If a Poisson distribution is considered to govern the number of ships in an area, it does not necessarily follow that the (stationary) density of ships is constant throughout that area. Indeed, if an area is comprised of a number of sub-areas having different ship densities, but each having Poisson distributed ship counts, then it follows that the larger area also exhibits Poisson distributed ship counts.

RANDOM VARIATIONS IN SHIP COUNTS (U)

(U) The area common to the areas of complete coverage for the four days of shipping surveillance was determined by inspecting Figures 14-17. This area, hereafter called the COMMON AREA, consists of the 141 $1^\circ \times 1^\circ$ cells shown in figure 24. The ship counts within the COMMON AREA are shown in Table 6.

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TABLE 6(C)

Ship Counts in the Common Area(U)

<u>6 Aug</u>	<u>21 Aug</u>	<u>29 Aug</u>	<u>8 Sept</u>	<u>Mean</u>
226	343	193	228	247.5

(U)Returning now to our first principal question -- Is it reasonable to attribute this variation solely to randomness? Clearly, the four ship counts are not random samples from a Poisson distribution. This can be seen most simply by noting that the 21 Aug value of 343 ships is more than 6σ away from the mean of 247.5 (if σ is presumed to equal $\sqrt{247.5}$ as in a Poisson distribution). It could still be, of course, that the four ship counts are properly random samples from some other distribution.

(U)In an attempt to check the consistency of the four shipping distributions, the following procedure was followed: For each of the four days, the number of $1^\circ \times 1^\circ$ cells having exactly n ships was determined.

TABLE 7(U)

Number of Cells Having N Ships(U)

# Ships (n) per cell	Aug 6	Aug 21	Aug 29	Sept 8	Average Count	Average Fraction
0	65	54	71	73	65.75	.466
1	31	33	34	29	31.75	.225
2	25	22	18	14	19.75	.140
3-5	11	12	10	13	11.50	.082
6 or more	9	20	8	12	12.25	.087
Total	141	141	141	141	141	1.000

Next, it was hypothesized that, for each of the four days, each cell was populated by sampling from the distribution represented by the last column of Table 7. This hypothesis can be readily checked with a χ^2 -test with the result that $\chi^2=14.97$ which, for 12 degrees of freedom

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[(5-1)(4-1)], is exceeded by chance with $p=.25$. Thus, the test provides no evidence for rejecting the notion that all four observed shipping distributions come from the same underlying distribution.

SYSTEMATIC VARIATIONS IN SHIP COUNTS(U)

(U) If the day-to-day variation in ship counts cannot be explained solely by randomness (unfortunately, this remains an open question), then what was the likely cause? Apparently, the variation cannot be attributed to the different areas of coverage on the four days (Compare Tables 5 and 6). The other two possible explanations, mentioned in the introduction, are discussed separately in the following sections.

Effects of Fishing Vessels(U)

(U) It may be that certain ships, particularly fishermen, tend to stay in port during periods of bad weather, and to travel in a correlated and therefore non-Poisson fashion when at sea. If this is true, and if we could separate the COMMON AREA into two sub-areas, one entered by fishermen and the other not, then perhaps the area not containing fishermen would exhibit Poisson distributed ship counts. Figure 15 of Merchant Vessel Population and Distribution¹ was used to so divide the COMMON AREA. Unfortunately, this division placed the cell between 17°-18°W and 48°-49°N into the area of no fishermen despite the presence of a large fishing fleet on 21 Aug as reported by aircraft AS025 and confirmed by aircraft AS027. After taking the liberty of adding this cell to the sub-area presumed to contain fishermen, the final partitioning of the COMMON AREA became what is shown in Figure 25. The ship counts within the two sub-areas are shown in the following table.

¹ National and International Merchant Vessel Population and Distribution: Present and Forecast, Automated Marine International, DOT-CG-00505A(1), 15 Sept. 1970, UNCLASSIFIED.

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TABLE 8(C)

Ship Counts: Area Divided by Fishing Criterion(U)

	6 Aug	21 Aug	29 Aug	8 Sept	Mean
Sub-Area Presumed to Contain Fishermen	168	286	147	189	197.5
Sub-Area Presumed to have no Fishermen	58	57	46	39	50.0
Total	226	343	193	228	247.5

(U)Now, it is clear that the distribution of ship counts within the fishing area is non-Poisson. For example, an unbiased estimate of the distribution σ , calculated from

$$\sigma^2 = 1/3 \sum_{i=1}^4 (x_i - \bar{x})^2,$$

gives $\sigma=61$ as compared with the $\sigma=14$ of a Poisson distribution of mean 197.5.

(U)The ship count distribution within the non-fishing area is surely much more "Poisson-like". The unbiased estimate of this distribution σ , computed in the same way, is 9.1 as compared with the $\sigma=7.1$ of a Poisson distribution of mean 50.0. Unfortunately, it is difficult to construct a formal test of the hypothesis that four numbers (only) are samples from a Poisson distribution.

(U)It should be pointed out that, even if the non-Poisson behavior of ship counts is solely due to the correlated movement of fishing ships, we should still expect slightly more than a Poisson variation in counts within the "Non-fishing Area". Surely the data within an area so labelled are contaminated by some fishing ships.

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Effects of Weather(U)

(C) The possibility was considered that the survey methods used during Exercise SQUARE DEAL were inadequate during periods of bad weather in which case the ship counts of 6 Aug, 29 Aug, and 8 Sept would be doubtful. By examining the records of the 34 surveillance sorties flown during the exercise, it was possible to characterize the weather in the COMMON AREA in a very approximate way as:

6 Aug - Very bad almost everywhere in the COMMON AREA.

21 Aug - Very good almost everywhere in the COMMON AREA.

29 Aug - Bad to the north, good to the south; striking change in weather around 52°N.

8 Sept - Bad everywhere, probably not as bad as 6 Aug.

The considerable North/South change in weather on 29 Aug suggested the following approach: First, that the COMMON AREA be divided along latitude 52°N (see Figure 26) and the ship counts in each sub-area determined as in Table 9.

TABLE 9(C)

Ship Counts: Area Divided by Weather Criterion(U)

	6 Aug	21 Aug	29 Aug	8 Sept	Total
North of 52°N	17	39	7	11	74
South of 52°N	209	304	186	217	916
Total	226	343	193	228	990

Then, it is asked whether the north/south distribution of detections on 29 Aug is significantly more extreme than those of the other three days. For this purpose, it is supposed that each of the 990 ships detected in the COMMON AREA could have been in the northern sub-area with probability $p=74/990=.07475$ (and $q=.92525$). Then the actual number (x) of ships in the northern sub-area on any of the four survey days is a sample from a Binomial distribution of mean value (\bar{x}) as

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shown in table 10. These Binomial distributions may be approximated as normal distributions also as shown in table 10.

TABLE 10(U)

Ship Counts: Statistics of North/South Distributions(U)

	6 Aug	21 Aug	29 Aug	8 Sept
$\bar{x} = np$	16.89	25.64	14.43	17.04
$\sigma = \sqrt{npq}$	3.95	4.87	3.65	3.97
# Normal Deviates = $\frac{x-\bar{x}}{\sigma}$.028	2.74	-2.03	-1.52
Probability exceed by chance (two tailed)	.980	.006	.004	.130

(U)The 29 Aug value of .044 is somewhere around the limit of what we ordinarily accept for a chance occurrence. But note that the north/south detection distribution for 21 Aug is clearly more extreme than can be explained by chance even though there was no apparent north/south variation in weather. Thus, at least by comparison, the north/south distribution of detections for 29 Aug is not particularly extreme.

(U)If the prospect of bad weather tends to keep some ships in port, but if those that are at sea have the same north/south tendency regardless of where the bad weather occurs, then the preceeding analysis would suggest, at least for 29 Aug, that bad weather did not greatly degrade shipping surveillance. If, on the other hand, the effect of bad weather is to reduce shipping only in the immediate vicinity of the bad weather then the small population observed in the northern sub-area of 29 Aug was certainly to be expected.

SUMMARY(U)

(U)The conclusions which can be drawn in this section are not as firm as we would prefer. The following statements appear justified,

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however:

1. The four ship counts in the COMMON AREA obtained during SQUARE DEAL are surely not samples from a Poisson distribution.
2. There is no good reason to believe that the four ship counts are somehow inconsistent, however. They may well be samples from some other distribution.
3. To the extent that the variation in ship counts had a systematic cause, it appears that a contributor was the tendency of fishermen to remain in port during bad weather.
4. If the quality of surveillance was degraded during periods of bad weather, it is believed that the effect was slight.

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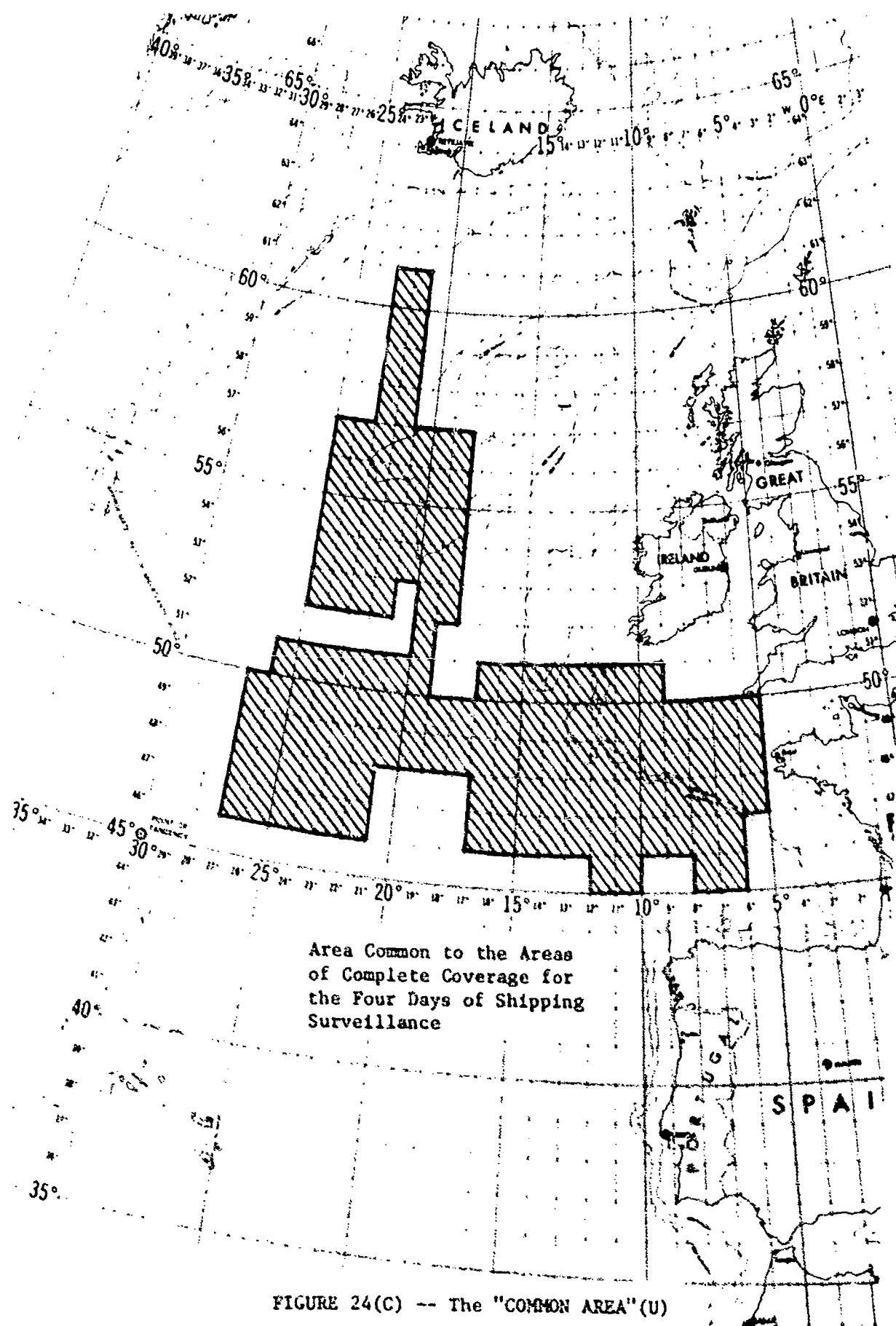


FIGURE 24(C) -- The "COMMON AREA"(U)

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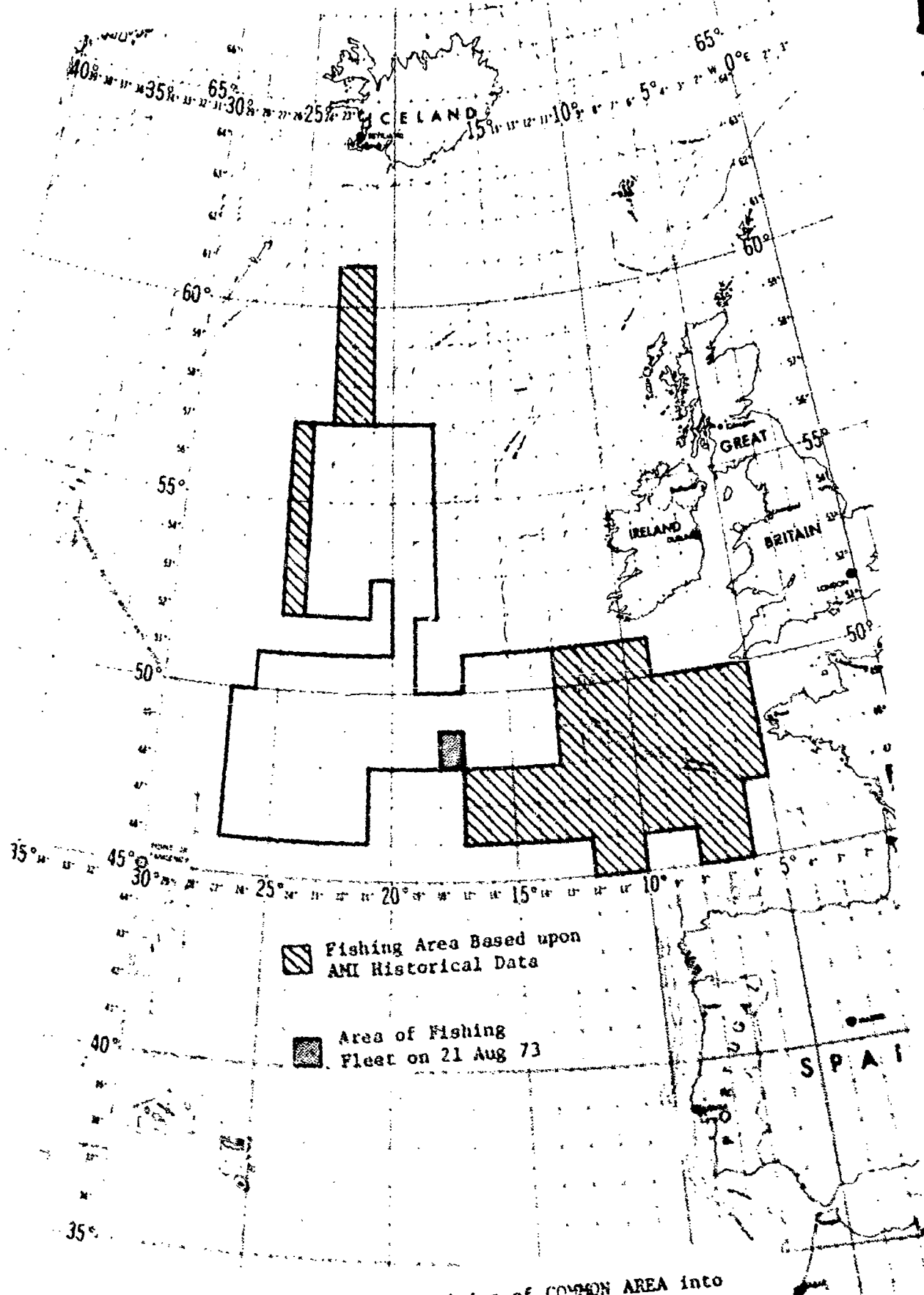


FIGURE 25(C) -- Division of COMMON AREA into Fishing and Non-Fishing(U)

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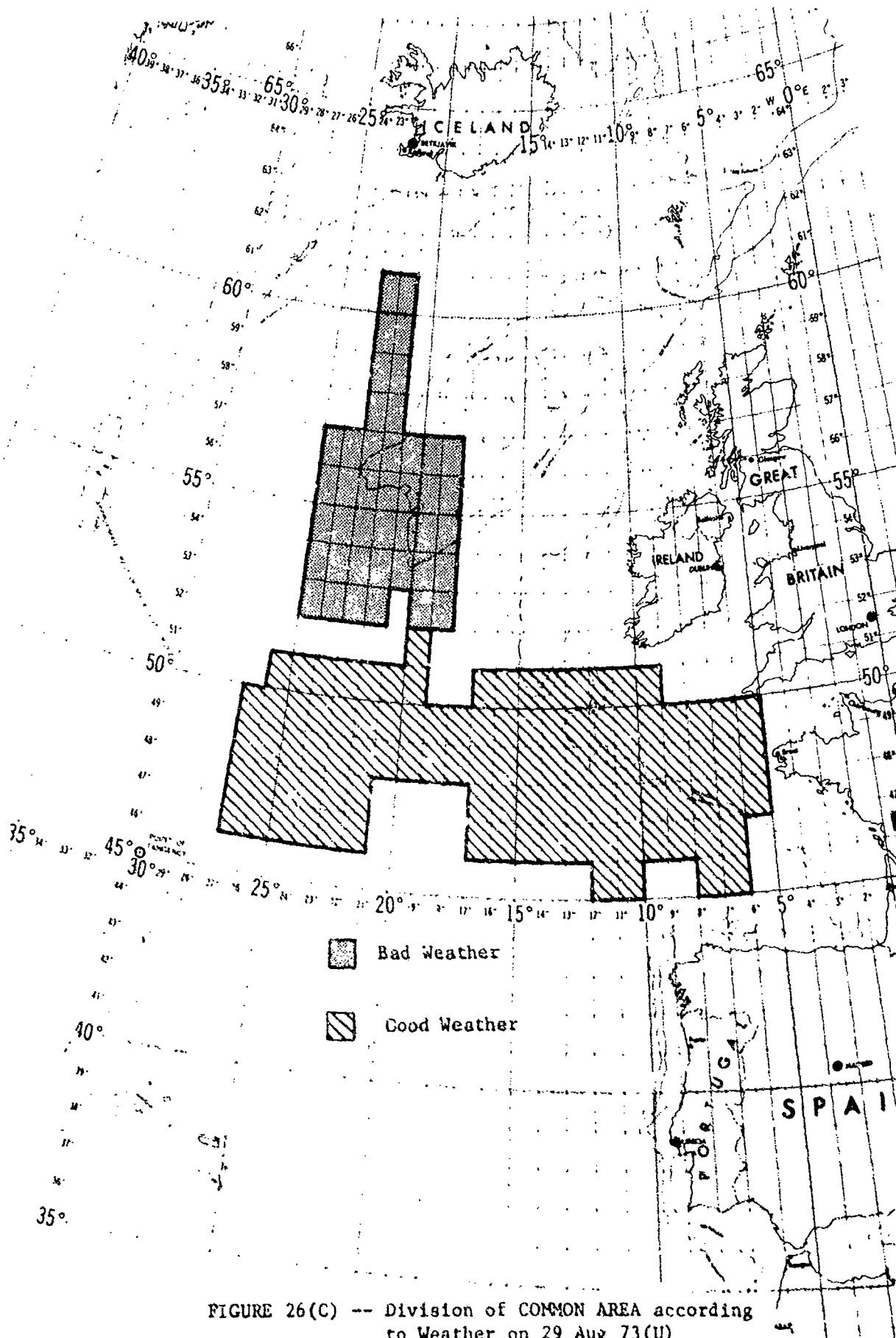


FIGURE 26(C) -- Division of COMMON AREA according to Weather on 29 Aug 73 (U)

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VI — AVAILABILITY OF THE UNPROCESSED SHIPPING DATA FROM SQUARE DEAL (U)

(U) The unprocessed shipping data collected during Exercise SQUARE DEAL are available for the use of authorized investigators and may be inspected by contacting Raff Associates, Inc., 912 Thayer Avenue, Silver Spring, Md. 20910. The purpose of this section is to describe the kinds of data that are available.

(C) The data are stored in 35 packets, one for each sortie from which usable shipping data were taken. The Event Numbers of the 35 sorties, and the corresponding types of aircraft, are shown in Table 11. It should perhaps be explained that aircraft AS022T aborted early in its mission and produced very little data. The replacement aircraft, here designated by AS022, produced almost all of the ship contacts attributed to event AS022 in the Ship Contact Tables. Aircraft AS022T and AS022 were treated as one in Section I of this report in which only 34 surveillance sorties were described.

NIMRODs (U)

(C) The NIMROD data packets contain the following:

1. A Flight Plan and Navigation Log
2. A Plotting Chart
3. ROT forms. These constitute the record of ship contacts obtained in transit to and from the OP Area.
4. RST forms. These contain the multiple radar contacts obtained within the OP Area which are the basis for computed ship speeds and courses.
5. VST forms. These contain descriptions of ship characteristics noted during low-altitude visual inspections.
6. A Photographic Reconnaissance Report and photographs of many of the ships observed visually.

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P-3Cs (U)

(C)The P-3C data packets contain the following:

1. A Navigational Log
2. ROT forms (see above)
3. RST forms (see above)
4. VST forms (see above)
5. A computer print-out of flight records

VICTOR/VULCANs (U)

(C)The VICTOR/VULCAN data packets contain the following:

1. A Communications Log
2. A Navigation Log
3. A Plotting Chart
4. A Maritime Reconnaissance Report. This is the record of ship contacts and is similar to the ROT forms.
5. Film strips of the radar scope which was photographed three times per minute during a sortie.

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TABLE 11(C)
Packets of SQUARE DEAL Shipping Data(U)

6 August 73		21 August 73		29 August 73		8 September 73	
Event #	A/C Type	Event #	A/C Type	Event #	A/C Type	Event #	A/C Type
AS001	NIMROD	AS022T	NIMROD	AS033	NIMROD	AS050	NIMROD
AS002	NIMROD	AS022	NIMROD	AS034	NIMROD	AS051	NIMROD
AS003	P - 3C	AS023	NIMROD	AS035	P - 3C	AS052	P - 3C
AS004	P - 3C	AS024	P - 3C	AS036	P - 3C	AS053	P - 3C
AS005	VULCAN	AS025	P - 3C	AS037	VICTOR	AS054	VICTOR
AS006	VULCAN	AS026	VICTOR	AS038	VICTOR	AS055	VICTOR
AS007	VICTOR	AS027	VICTOR	AS039	VICTOR	AS056	VULCAN
AS008	VICTOR	AS028	VICTOR	AS040A	VULCAN	AS057A	VULCAN
		AS029	VULCAN	AS040B	VULCAN	AS057B	VULCAN

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APPENDIX A - DETAILED SHIPPING RESULTS (U)

(C)The material in this Appendix is divided into four sections, each of which contains the detailed results of one of the four days of shipping surveillance conducted during Exercise SQUARE DEAL. Each section is further divided into (1) a chart of ship counts for that surveillance day, (2) tables of ship locations, and (3) tables of ship attributes.

SHIP COUNT CHARTS (U)

(U)Use of the tables of ship locations and ship attributes is facilitated by referring to the chart of ship counts for the day in question. These charts have been divided into 1° x 1° cells which are categorized according to whether they were fully surveyed by surveillance aircraft. Also shown on the charts of ship counts are the numbers of ships detected within each cell.

SHIP LOCATION TABLES (U)

(U)The tables of ship locations are divided into two parts; first, ships from cells of full coverage, second, ships from partially covered cells. Within either part, cells are processed in order of increasing latitude north and increasing longitude west. Within a cell, ships are listed in arbitrary order. Note that ships within a cell appear together as a group and that spaces are used to separate such groups.

(U)A four digit ship designation code is used to name individual ships. The first digit identifies the surveillance day as follows: 1 = 6 August, 2 = 21 August, 3 = 29 August, 4 = 8 September. The following three digits are sequential in the order that the ships appear in the ship location table. An * after the ship designation code indicates that further information is available in the ship attribute table.

(U)Many ships were detected by more than one aircraft or more than once by the same aircraft. In order not to give an inflated impression of ship density, these ships appear in the ship location tables only once. The event number of the detecting aircraft merely identifies the aircraft from which the data appearing in the tables were taken. It should not be inferred that a certain ship was detected only by that aircraft.

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(U)Most often, the time, ship latitude, and ship longitude shown in a ship location table are merely the time and location at which the ship was detected. Whenever possible, however, ship latitude and longitude have been projected to 1200Z. When this is the case, the time shown in the ship location table is 1200, the ship designation code is followed by an *, and at least one estimate of course and speed is shown in the ship attribute table. All latitudes are north; all longitudes are west unless east is indicated (as for a few ships on 29 August).

(C)Ships detected by VICTORs and VULCANs were usually described as S, M, or L according to whether the radar return was judged to be small, medium, or large. Equivalent entries were very rarely made on-board P-3s and NIMRODs. The designations of S, M, and L are considered to be very rough estimators of ship size. Ship length based upon a visual examination was frequently recorded within P-3s and NIMRODs. For these cases, ship length in feet appears in the size column of the ship location tables.

SHIP ATTRIBUTE TABLES (U)

(U)The ship designation numbers used in the ship attribute tables correspond exactly to those in the ship location tables. Indeed, the principal reason for having a ship designation code is to permit the same ship to be found in both types of tables.

(U)A ship name appearing in a ship attribute table is merely a transcription of what was recorded in the surveillance aircraft. No attempt has been made to determine proper spelling.

(U)The ship type is also an exact transcription of what was recorded in the aircraft. No attempt has been made to develop a consistent nomenclature.

(U)Note that a speed and course estimate can be either (a) based upon a visual examination of the ship or (b) calculated from multiple radar contacts on the ship. The calculated values of speed and course are preferred for the purpose of projecting ship location to 1200Z. Visual estimates of speed and course are used for this purpose in the absence of calculated values.

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(C)Note that ship length can be either the published value or based upon a visual estimation. In the former category are SQUARE DEAL ships and many of the ships rigged by P-3s (which carry a register of ships).

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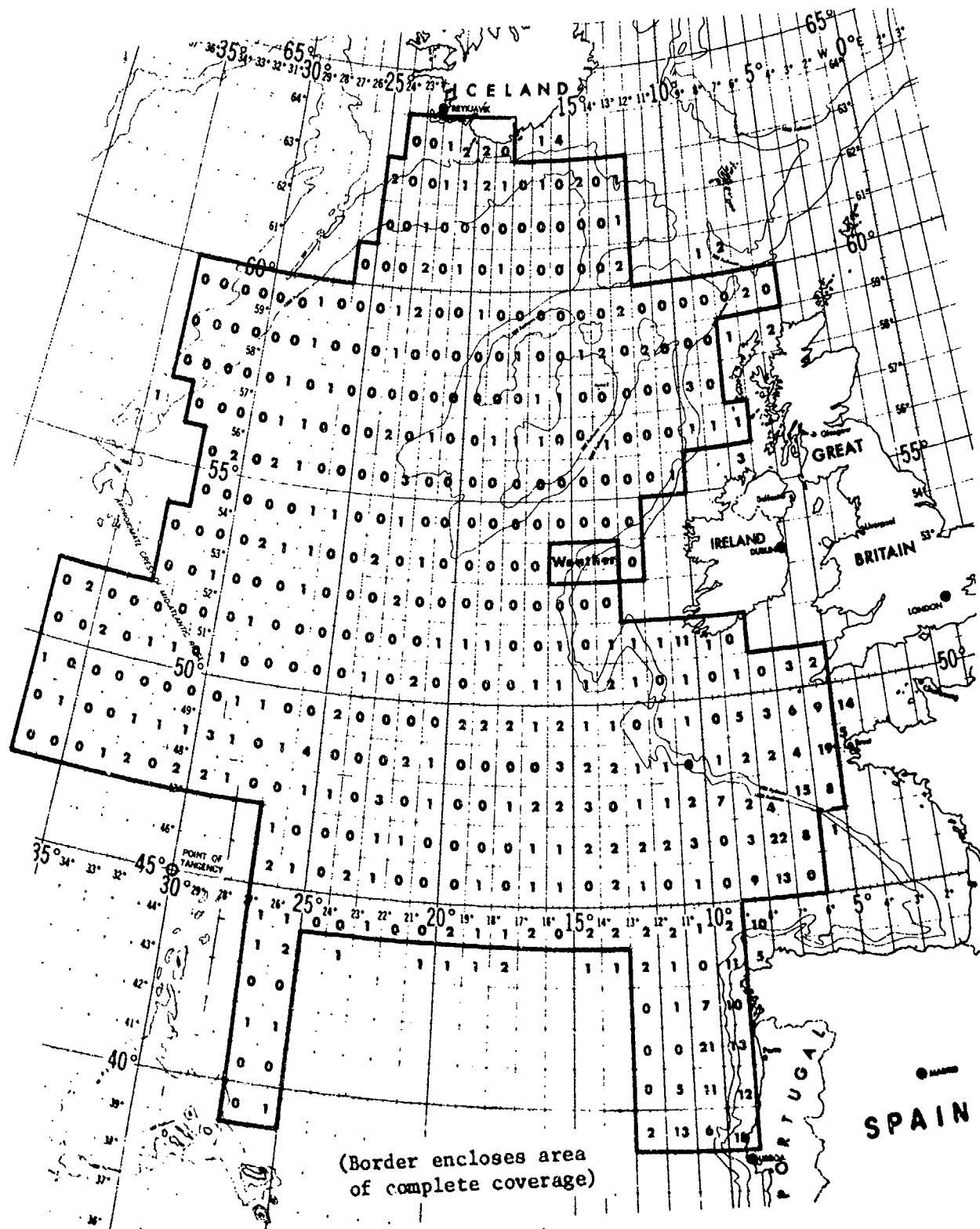


FIGURE A1(C) -- Ship Counts on 6 August 73(U)

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SHIP LOCATIONS - 6 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1001	AS008	1359	3959	0958	M
1002	AS008	1359	3959	0958	M
1003	AS008	1400	3951	0943	M
1004	AS008	1400	3943	0943	M
1005	AS008	1400	3943	0943	M
1006	AS008	1400	3925	0953	M
1007	AS008	1401	3921	0946	M
1008	AS008	1401	3921	0946	M
1009	AS008	1401	3921	0946	M
1010	AS008	1401	3937	0935	M
1011	AS008	1401	3937	0935	M
1012	AS008	1401	3929	0943	M
1013	AS008	1402	3937	0942	M
1014	AS008	1403	3940	0931	S
1015	AS008	1403	3937	0933	S
1016	AS008	1404	3905	0940	M
1017	AS008	1404	3904	0951	M
1018	AS008	1404	3904	0951	M
1019	AS008	1358	3947	1012	M
1020	AS008	1359	3915	1002	M
1021	AS008	1400	3915	1003	M
1022	AS008	1400	3915	1003	M
1023	AS008	1400	3915	1003	M
1024	AS008	1404	3901	1018	M
1025	AS008	1348	3955	1150	M
1026	AS008	1348	3951	1111	M
1027	AS008	1350	3928	1122	S
1028	AS008	1350	3914	1132	M
1029	AS008	1350	3925	1126	M
1030	AS008	1351	3945	1100	M
1031	AS008	1351	3927	1112	M
1032	AS008	1352	3936	1100	M
1033	AS008	1353	3923	1137	M
1034	AS008	1354	3928	1126	M
1035	AS008	1354	3930	1108	M
1036	AS008	1355	3903	1123	M
1037	AS008	1355	3937	1108	M
1038	AS008	1346	3958	1227	M
1039	AS008	1352	3948	1224	S
1040	AS001	1513	3914	2517	

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SHIP LOCATIONS - 6 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1041	AS008	1359	4006	0957	M
1042	AS008	1401	4029	0957	M
1043	AS008	1401	4029	0957	M
1044	AS008	1401	4029	0957	M
1045	AS008	1401	4023	0948	M
1046	AS008	1401	4023	0948	M
1047	AS008	1401	4023	0948	M
1048	AS008	1401	4023	0948	M
1049	AS008	1402	4031	0951	M
1050	AS008	1402	4031	0951	M
1051	AS008	1402	4031	0951	M
1052	AS008	1406	4026	0950	S
1053	AS008	1343	4057	1050	M
1054	AS008	1347	4018	1054	M
1055	AS008	1356	4036	1058	M
1056	AS008	1356	4032	1055	M
1057	AS008	1358	4028	1025	M
1058	AS008	1359	4016	1003	M
1059	AS008	1400	4040	1033	M
1060	AS008	1402	4041	1023	M
1061	AS008	1407	4045	1016	M
1062	AS008	1409	4001	1022	M
1063	AS008	1409	4036	1054	M
1064	AS008	1344	4022	1115	M
1065	AS008	1355	4028	1103	M
1066	AS008	1408	4010	1103	M
1067	AS008	1408	4010	1103	M
1068	AS008	1408	4010	1103	M
1069	AS008	1408	4106	0955	M
1070	AS008	1409	4106	0943	M
1071	AS008	1409	4100	0953	M
1072	AS008	1410	4105	0908	M
1073	AS008	1410	4115	0943	M
1074	AS008	1411	4126	0953	M
1075	AS008	1411	4110	0906	M
1076	AS008	1412	4133	0941	M
1077	AS008	1412	4133	0941	M
1078	AS008	1412	4133	0941	M
1079	AS008	1412	4133	0941	M
1080	AS008	1413	4129	0958	M
1081	AS008	1415	4153	0941	M

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SHIP LOCATIONS - 6 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1082	AS008	1337	4150	1056	M
1083	AS008	1339	4126	1053	M
1084	AS008	1409	4108	1000	M
1085	AS008	1411	4117	1030	M
1086	AS008	1412	4127	1023	M
1087	AS008	1413	4134	1019	M
1088	AS008	1413	4134	1019	M
1089	AS008	1413	4134	1019	M
1090	AS008	1414	4145	1007	M
1091	AS008	1414	4118	1054	M
1092	AS008	1415	4141	1008	M
1093	AS008	1415	4152	1012	M
1094	AS008	1415	4147	1033	M
1095	AS008	1415	4150	1014	M
1096	AS008	1415	4150	1014	M
1097	AS008	1415	4150	1014	M
1098	AS008	1415	4150	1014	S
1099	AS008	1415	4153	1006	M
1100	AS008	1416	4152	1032	M
1101	AS008	1417	4155	1040	M
1102	AS008	1418	4155	1041	H
1103	AS001	1450	4122	2533	
1104	AS001	1459	4119	2647	
1105	AS008	1417	4210	0947	M
1106	AS008	1419	4214	0950	M
1107	AS008	1420	4227	0957	M
1108	AS008	1420	4227	0957	M
1109	AS008	1421	4236	0948	M
1110	AS008	1421	4236	0948	M
1111	AS008	1421	4236	0948	M
1112	AS008	1421	4242	0935	M
1113	AS008	1422	4250	0944	S
1114	AS008	1423	4259	0942	N
1115	AS008	1417	4204	1028	M
1116	AS008	1417	4204	1028	N
1117	AS008	1417	4206	1002	M
1118	AS008	1418	4215	1020	N
1119	AS008	1419	4225	1048	M
1120	AS008	1421	4215	1045	M
1121	AS008	1422	4233	1042	M
1122	AS008	1331	4227	1100	N

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SHIP LOCATIONS ~ 6 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1123	AS008	1424	4301	0937	M
1124	AS008	1424	4301	0937	S
1125	AS008	1424	4301	0937	S
1126	AS008	1424	4301	0937	S
1127	AS008	1425	4307	0915	L
1128	AS008	1425	4307	0915	S
1129	AS008	1427	4328	0927	L
1130	AS008	1428	4335	0922	M
1131	AS008	1432	4358	0915	M
1132	AS008	1433	4342	0910	S
1133	AS008	1433	4355	0951	S
1134	AS008	1325	4313	1108	M
1135	AS008	1316	4347	1233	M
1136	AS008	1318	4321	1240	M
1137	AS008	1227	4354	2500	S
1138	AS001	1429	4328	2520	
1139	AS001	1429	4322	2616	
1140	AS008	1433	4407	0913	S
1141	AS008	1434	4420	0910	S
1142	AS008	1436	4437	1018	M
1143	AS008	1319	4421	1143	M
1144	AS008	1319	4421	1143	M
1145	AS008	1313	4402	1253	M
1146	AS008	1314	4402	1240	M
1147	AS008	1310	4414	1333	M
1148	AS008	1315	4454	1308	M
1149	AS008	1307	4422	1410	M
1150	AS008	1300	4431	1456	M
1151	AS008	1259	4456	1649	M
1152	AS008	1302	4452	1608	M
1153	AS008	1130	4454	1705	M
1154	AS008	1250	4445	1808	M

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SHIP LOCATIONS - 6 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1155	AS008	1242	4448	1958	M
1156	AS008	1242	4400	1933	L
1157	AS008	1229	4405	2233	M
1158	AS001	1422	4432	2507	L
1159*	AS001	1200	4438	2614	L
1160	AS008	1453	4552	0740	M
1161	AS008	1453	4526	0740	M
1162	AS008	1453	4526	0740	M
1163	AS008	1453	4526	0740	M
1164	AS008	1453	4539	0737	M
1165	AS008	1453	4539	0737	M
1166	AS008	1453	4539	0737	M
1167	AS008	1453	4539	0737	M
1168	AS008	1453	4539	0737	M
1169	AS008	1454	4504	0744	M
1170	AS008	1454	4504	0744	M
1171	AS008	1454	4504	0744	S
1172	AS008	1454	4534	0717	S
1173	AS008	1432	4545	0856	M
1174	AS008	1443	4512	0840	M
1175	AS008	1447	4530	0831	M
1176	AS008	1451	4515	0811	M
1177	AS008	1451	4515	0811	M
1178	AS008	1451	4531	0803	S
1179	AS008	1452	4535	0832	M
1180	AS008	1452	4506	0804	M
1181	AS008	1452	4506	0804	M
1182	AS008	1044	4507	1007	M
1183	AS008	1053	4525	1225	M
1184	AS008	1315	4511	1341	M
1185	AS008	1318	4515	1311	M
1186	AS008	1119	4501	1559	M
1187	AS008	1120	4541	1648	M
1188	AS008	1137	4513	1856	M

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SHIP LOCATIONS - 6 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1189	AS008	1221	4515	2253	L
1190	AS008	1202	4542	2331	L
1191	AS008	1204	4547	2313	L
1192	AS001	1410	4512	2548	
1193	AS001	1408	4545	2635	
1194	AS001	1409	4528	2610	
1195	AS008	1459	4616	0653	M
1196	AS008	1506	4640	0656	M
1197	AS008	1506	4640	0656	M
1198	AS008	1506	4640	0656	M
1199	AS008	1506	4640	0656	M
1200	AS008	1506	4640	0656	M
1201	AS008	1506	4639	0647	S
1202	AS008	1506	4639	0647	S
1203	AS008	1024	4640	0707	M
1204	AS008	1027	4622	0742	M
1205	AS008	1456	4605	0728	M
1206	AS008	1456	4605	0728	M
1207	AS008	1456	4605	0728	M
1208	AS008	1456	4605	0728	M
1209	AS008	1457	4623	0730	M
1210	AS008	1457	4623	0730	M
1211	AS008	1457	4616	0711	M
1212	AS008	1457	4616	0711	M
1213	AS008	1457	4616	0711	S
1214	AS008	1457	4618	0716	M
1215	AS008	1459	4628	0731	M
1216	AS008	1505	4622	0717	M
1217	AS008	1505	4622	0717	M
1218	AS008	1505	4622	0717	M
1219	AS008	1505	4622	0717	M
1220	AS008	1505	4631	0712	M
1221	AS008	1505	4631	0712	M
1222	AS008	1505	4631	0712	M
1223	AS008	1505	4631	0712	M
1224	AS008	1505	4633	0700	M
1225	AS008	1030	4609	0811	M
1226	AS007	1430	4656	0811	M
1227	AS007	1430	4656	0811	S

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SHIP LOCATIONS - 6 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1228	AS007	1422	4638	1030	M
1229	AS008	1038	4626	1022	M
1230	AS008	1038	4625	1016	M
1231	AS008	1054	4632	1140	S
1232	AS007	1416	4647	1137	S
1233	AS007	1413	4658	1219	M
1234	AS008	1052	4611	1227	M
1235	AS007	1406	4653	1345	M
1236	AS007	1406	4655	1329	M
1237	AS008	1104	4607	1427	M
1238	AS008	1110	4643	1423	M
1239	AS008	1113	4634	1516	S
1240	AS008	1120	4636	1621	M
1241	AS008	1157	4645	2112	L
1242	AS008	1202	4630	2256	L
1243	AS001	1358	4640	2641	
1244	AS008	1510	4707	0530	M
1245	AS008	1511	4737	0558	M
1246	AS008	1513	4717	0513	S
1247	AS008	1514	4755	0547	M
1248	AS008	1514	4755	0547	M
1249	AS008	1515	4710	0503	S
1250	AS008	1515	4758	0537	M
1251	AS008	1517	4757	0505	M

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SHIP LOCATIONS - 6 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1252	AS008	1508	4712	0625	M
1253	AS008	1508	4712	0625	M
1254	AS008	1508	4712	0625	M
1255	AS008	1508	4704	0642	M
1256	AS008	1509	4717	0630	M
1257	AS008	1509	4717	0630	M
1258	AS008	1509	4717	0630	S
1259	AS008	1509	4717	0630	M
1260	AS008	1510	4727	0615	M
1261	AS008	1510	4733	0607	M
1262	AS008	1510	4733	0607	M
1263	AS008	1511	4738	0620	L
1264	AS008	1513	4751	0601	L
1265	AS008	1513	4750	0611	M
1266	AS008	1514	4756	0600	S
1267	AS008	1508	4705	0714	L
1268	AS008	1511	4733	0702	M
1269	AS008	1512	4743	0713	M
1270	AS008	1514	4742	0720	M
1271	AS007	1428	4743	0828	M
1272	AS007	1430	4715	0814	M
1273	AS007	1425	4731	0919	M
1274	AS007	1425	4731	0919	M
1275	AS007	1425	4731	0919	M
1276	AS007	1425	4731	0919	S
1277	AS007	1425	4731	0919	S
1278	AS007	1425	4731	0919	S
1279	AS008	1433	4702	0936	M
1280	AS007	1420	4714	1019	M
1281	AS007	1422	4753	1026	M
1282	AS007	1416	4722	1141	M
1283	AS007	1413	4719	1222	S
1284	AS007	1400	4739	1448	S
1285	AS007	1402	4723	1402	S
1286	AS007	1406	4758	1415	S
1287	AS007	1358	4727	1510	M
1288	AS007	1358	4727	1510	M

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SHIP LOCATIONS - 6 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1289	AS007	1353	4725	1636	M
1290	AS007	1353	4736	1636	S
1291	AS007	1349	4746	1737	M
1292	AS007	1337	4723	2037	M
1293	AS007	1328	4730	2237	M
1294	AS007	1328	4730	2237	S
1295	AS007	1331	4752	2207	M
1296	AS007	1319	4739	2446	S
1297	AS001	1351	4734	2506	
1298	AS007	1303	4732	2835	M
1299	AS007	1257	4723	2939	S
1300	AS007	1300	4736	2925	S
1301	AS007	1251	4734	3053	S
1302	AS007	1300	4758	3007	S
1303	AS007	1242	4722	3256	M
1304	AS007	1245	4733	3238	S
1305	AS007	1242	4700	3304	M
1306	AS008	1515	4805	0557	M
1307	AS008	1516	4811	0550	L
1308	AS008	1516	4810	0551	M
1309	AS008	1516	4810	0551	M
1310	AS008	1516	4810	0551	M
1311	AS008	1516	4810	0551	M
1312	AS008	1516	4810	0551	M
1313	AS008	1517	4815	0536	L
1314	AS008	1518	4820	0535	M
1315	AS008	1518	4807	0512	M
1316	AS008	1518	4807	0512	M
1317	AS008	1519	4831	0537	M
1318	AS008	1520	4834	0539	M
1319	AS008	1520	4834	0539	M
1320	AS008	1520	4834	0539	M
1321	AS008	1520	4827	0512	M
1322	AS008	1520	4827	0512	M
1323	AS008	1520	4827	0512	M
1324	AS008	1520	4827	0512	M

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SHIP LOCATIONS - 6 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1325	AS008	1519	4836	0609	M
1326	AS008	1520	4808	0617	L
1327	AS008	1521	4852	0628	M
1328	AS008	1521	4852	0628	M
1329	AS008	1013	4817	0727	M
1330	AS007	1434	4805	0732	S
1331	AS007	0908	4841	0819	M
1332	AS007	0910	4816	0800	M
1333	AS007	0910	4824	0905	M
1334	AS007	1420	4804	1140	S
1335	AS007	0927	4833	1208	S
1336	AS007	0933	4855	1310	S
1337	AS007	0933	4852	1319	S
1338	AS007	0941	4825	1452	M
1339	AS007	0946	4824	1426	M
1340	AS007	0948	4857	1527	S
1341	AS007	0948	4857	1527	S
1342	AS007	0948	4857	1527	S
1343	AS007	1340	4800	2011	S
1344	AS007	1022	4856	2115	S
1345	AS007	1022	4856	2115	S
1346	AS007	1044	4847	2524	M
1347	AS007	1319	4808	2534	S
1348	AS007	1319	4808	2534	S
1349	AS007	1319	4808	2534	S
1350	AS001	1346	4837	2658	
1351	AS007	1306	4805	2846	S
1352	AS007	1108	4832	2918	M
1353	AS007	1118	4841	2937	S
1354	AS007	1118	4837	2922	S
1355	AS007	1257	4816	3027	S

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1356	AS007	1257	4817	3100	M
1357	AS007	1127	4859	3215	L
1358	AS007	1224	4803	3538	S
1359	AS008	1526	4936	0557	M
1360	AS008	1526	4936	0557	M
1361	AS008	1526	4936	0557	M
1362	AS008	1526	4936	0557	M
1363	AS008	1527	4944	0530	M
1364	AS008	1527	4944	0530	M
1365	AS008	1527	4942	0505	M
1366	AS008	1528	4942	0515	M
1367	AS008	1530	4950	0505	S
1368	AS008	0959	4953	0600	M
1369	AS008	1002	4928	0629	M
1370	AS008	1002	4928	0629	M
1371	AS008	1004	4949	0605	M
1372	AS008	1006	4930	0617	M
1373	AS008	1006	4930	0617	M
1374	AS008	1008	4920	0711	M
1375	AS008	1008	4948	0707	M
1376	AS008	1011	4922	0715	M
1377	AS007	0901	4925	0803	M
1378	AS007	0901	4925	0803	S
1379	AS007	0908	4904	0826	M
1380	AS007	0912	4930	0844	S
1381	AS007	0912	4930	0844	S
1382	AS007	0916	4908	1004	S
1383	AS006	1450	4949	1135	S
1384	AS007	0938	4947	1326	M
1385	AS007	0946	4944	1436	M
1386	AS007	0948	4925	1525	M
1387	AS006	1329	4947	1534	M
1388	AS006	1322	4954	1647	M

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1389	AS006	1320	4926	1732	S
1390	AS006	1322	4951	1708	S
1391	AS006	1320	4950	1804	S
1392	AS006	1320	4950	1804	S
1393	AS006	1312	4934	1940	S
1394	AS006	1314	4938	1942	S
1395	AS007	1040	4901	2408	M
1396	AS007	1041	4901	2416	M
1397	AS001	1331	4952	2703	
1398	AS007	1108	4941	2814	S
1399	AS007	1214	4923	3644	S
1400	AS008	1532	5027	0517	M
1401	AS008	1533	5042	0539	M
1402	AS008	1530	5007	0601	M
1403	AS008	1533	5035	0608	M
1404	AS008	1533	5025	0635	M
1405	AS001	0744	5043	0853	
1406	AS001	0754	5034	1051	
1407*	AS001	1200	5058	1217	
1408	AS006	1443	5001	1303	S
1409	AS006	1443	5024	1310	S
1410	AS006	1441	5059	1437	S
1411	AS001	0824	5053	1529	
1412	AS006	1332	5054	1613	S
1413	AS006	1254	5026	2152	S
1414	AS006	1259	5017	2148	M
1415	AS006	1251	5052	2300	S
1416*	AS001	1200	5021	2914	

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1417	AS001	1104	5028	3150	
1418	AS007	1146	5050	3201	M
1419	AS007	1143	5023	3405	S
1420	AS007	1152	5050	3440	S
1421	AS001	0748	5124	0901	
1422	AS006	1501	5111	1015	M
1423	AS006	1501	5111	1015	S
1424	AS006	1501	5111	1015	S
1425	AS006	1501	5111	1015	S
1426	AS006	1501	5111	1015	S
1427	AS006	1501	5111	1015	S
1428	AS006	1501	5111	1015	S
1429	AS006	1501	5111	1015	S
1430	AS006	1501	5111	1015	S
1431	AS006	1501	5111	1015	S
1432	AS006	1501	5111	1015	S
1433	AS001	0757	5137	1113	
1434	AS001	0812	5105	1230	
1435	AS001	0820	5139	1334	
1436	AS006	1344	5135	1521	M
1437	AS006	1223	5156	1820	S
1438	AS006	1224	5115	1946	M
1439	AS006	1236	5156	2059	S
1440*	AS001	1200	5141	2849	200 ft
1441	AS007	1152	5136	3530	S
1442	AS007	1157	5105	3545	S
1443*	AS002	1200	5248	10	
1444	AS006	1245	5210	2203	M
1445*	AS004	1200	5238	2602	
1446*	AS001	1200	5215	3011	

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1447*	AS002	1200	5325	2132	
1448*	AS002	1200	5332	2303	230 ft
1449*	AS002	1200	5337	2333	230 ft
1450*	AS004	1200	5339	2650	
1451*	AS004	1200	5328	2701	
1452*	AS004	1200	5320	2834	
1453*	AS004	1200	5331	2828	
1454*	AS002	1200	5421	2235	
1455*	AS004	1200	5448	2513	
1456*	AS004	1200	5418	2613	
1457	AS002	0757	5525	1002	
1458*	AS002	1200	5500	2215	230 ft
1459*	AS002	1200	5521	2236	230 ft
1460*	AS002	1200	5519	2254	230 ft
1461*	AS003	1200	5549	2701	
1462	AS003	1439	5533	2802	
1463	AS002	0805	5541	2853	
1464*	AS004	1200	5530	3001	467 ft
1465*	AS004	1200	5551	3014	
1466	AS002	1511	5619	0732	
1467	AS002	1520	5609	0810	
1468	AS002	1521	5619	0910	
1469	AS002	0810	5640	1345	
1470	AS002	0819	5615	1607	
1471	AS006	1151	5652	1753	M
1472	AS006	1151	5646	1807	S

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1473	AS005	1244	5657	2121	M
1474	AS005	1235	5652	2337	M
1475*	AS002	1200	5633	2321	
1476*	AS003	1200	5626	2714	
1477*	AS003	1200	5626	2853	
1478	AS005	1325	5754	0947	M
1479	AS005	1327	5749	0904	M
1480	AS005	1327	5749	0904	M
1481	AS005	1303	5741	1515	M
1482	AS005	1300	5733	1601	M
1483	AS005	1222	5738	2644	M
1484	AS003	0822	5720	2853	
1485	AS005	0849	5838	1107	L
1486	AS005	1322	5810	1101	M
1487	AS005	0859	5844	1316	M
1488	AS005	0859	5844	1316	M
1489	AS005	0859	5853	1400	M
1490	AS005	1048	5841	1710	S
1491	AS004	0755	5846	2325	M
1492	AS003	1512	5843	2700	
1493	AS005	0834	5955	0611	M
1494	AS005	0836	5906	0619	M
1495	AS005	0852	5944	1255	L
1496	AS005	0852	5944	1255	L
1497	AS005	1052	5908	1902	M
1498	AS004	0755	5917	2246	M
1499	AS004	0755	5924	2247	M

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1500	AS004	0746	5905	2321	M
1501	AS003	1511	5903	2722	
1502	AS005	0913	6053	1230	M
1503	AS005	0913	6053	1230	M
1504	AS005	1044	6009	1816	M
1505	AS005	1016	6056	2004	M
1506	AS005	1011	6023	2200	M
1507	AS004	0726	6022	2254	L
1508	AS005	0910	6134	1235	M
1509	AS005	1000	6152	2338	M
1510	AS005	0921	6204	1203	M
1511	AS005	0922	6234	1436	M
1512	AS005	0928	6200	1437	L
1513	AS005	0931	6254	1620	M
1514	AS005	0936	6244	1821	M
1515	AS005	0942	6209	1943	M
1516	AS003	1610	6230	1938	
1517	AS004	0721	6206	2020	S
1518	AS003	1559	6205	2126	
1519	AS004	0714	6255	2455	S
1520	AS004	0714	6251	2407	S
1521	AS005	0940	6318	1904	M
1522	AS005	0945	6336	1956	M
1523	AS005	0945	6321	2020	S
1524	AS005	0949	6314	2016	M
1525	AS005	1948	6311	2118	M

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The following ships were outside the region of 1° x 1° cells that were fully surveyed.

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1526	AS008	1432	4337	0855	M
1527	AS008	1432	4337	0855	M
1528	AS008	1432	4351	0852	M
1529	AS008	1433	4358	0852	S
1530	AS008	1435	4356	0845	M
1531	AS008	1312	4322	1355	M
1532	AS008	1309	4350	1402	M
1533	AS008	1255	4321	1717	M
1534	AS008	1258	4319	1704	M
1535	AS008	1246	4348	1842	M
1536	AS008	1246	4319	1934	M
1537	AS008	1239	4358	2042	M
1538	AS008	1225	4329	2327	N
1539	AS008	1435	4402	0842	N
1540	AS008	1436	4411	0835	N
1541	AS008	1438	4446	0857	M
1542	AS008	1438	4417	0835	S
1543	AS008	1439	4406	0834	S
1544	AS008	1440	4448	0842	L
1545	AS008	1443	4438	0835	M
1546	AS008	1452	4455	0812	M
1547	AS008	1452	4455	0812	M
1548	AS008	1454	4450	0822	N
1549	AS008	1508	4637	0528	M

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
1550	AS008	1523	4827	0453	M
1551	AS008	1523	4827	0453	M
1552	AS008	1523	4801	0455	M
1553	AS008	1523	4801	0455	M
1554	AS008	1527	4845	0432	M
1555	AS008	1526	4903	0442	M
1556	AS008	1528	4944	0456	M
1557	AS008	1528	4941	0457	M
1558	AS008	1528	4941	0457	M
1559	AS008	1528	4941	0457	M
1560	AS008	1529	4924	0438	S
1561	AS008	1529	4924	0438	S
1562	AS008	1530	4951	0437	M
1563	AS008	1530	4928	0450	S
1564	AS008	1531	4954	0431	M
1565	AS008	1531	4954	0431	M
1566	AS008	1532	4955	0419	M
1567	AS008	1532	4955	0419	M
1568	AS008	1532	4944	0424	M
1569	AS002	1519	5557	0727	
1570	AS002	1519	5557	0742	
1571	AS002	1520	5555	0729	
1572	AS004	0938	5606	3459	
1573	AS005	0833	5851	0550	M
1574	AS005	0833	5851	0550	M
1575	AS005	0834	5842	0708	L
1576	AS005	0837	6004	0740	M
1577	AS005	0837	6004	0740	M
1578	AS005	0841	6011	0815	N
1579	AS005	0929	6326	1534	L
1580	AS005	0929	6326	1534	L
1581	AS005	0929	6326	1534	M
1582	AS005	0929	6326	1534	M
1583	AS005	0936	6325	1656	H

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SHIP ATTRIBUTES - 6 August 1973

Ship Designation	Ship Name	Nationality and Type	Speed (Knots)		Course (°)		Length (ft)	
			Publication	Visual	Calculated	Visual	Publication	Visual
1159		Bulk Carrier		10		060		
1407				12		275		
1416		Coastal Oiler		12	9.5	085		200
1440					13.2			
1443					15.0			
1445								
1446								
1447								
1448					5.5			
1449	Bardu	Freighter		15	11.3	240		230
1450	Rea	Freighter		15	11.4	220		230
1451					12.0			
1452					7.9			
1453					15.3			
1454					10.0			
1455					8.5			
1456					2.0			
1458					11.4			
1459	Tosca	Freighter		15	14.7	310		230
	Queens	Freighter		15	12.1	075		230
	Forth							
	#0114	Russian Freighter		15	14.1	055		230
1460					15.5			
1461					13.2			
1464					12.9			
1465					10.7			
1475	Evie	Greek Freighter		16	11.3	245		467
1476					7.3			
1477								

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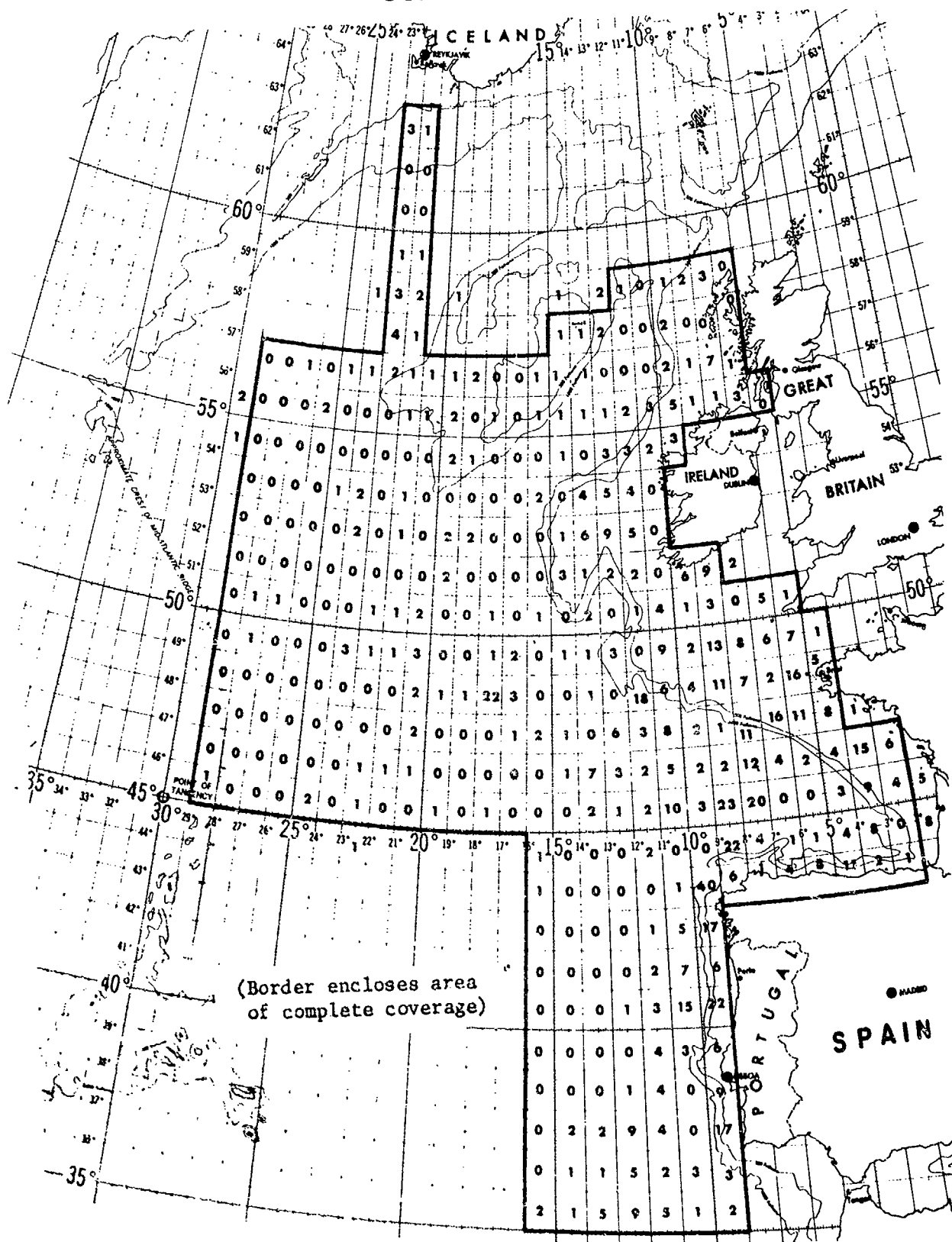


FIGURE A2(C) -- Ship Counts on 21 August 73(U)

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SHIP LOCATIONS - 21 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2001	AS028	1253	3537	0936	M
2002	AS028	1257	3550	0909	M
2003	AS028	1244	3532	1057	M
2004	AS028	1244	3532	1100	M
2005	AS028	1243	3556	1105	
2006	AS028	1243	3553	1105	
2007	AS028	1245	3550	1110	S
2008	AS028	1245	3555	1109	S
2009	AS028	1233	3526	1250	M
2010	AS028	1234	3517	1246	M
2011	AS028	1234	3523	1242	M
2012	AS028	1235	3532	1238	M
2013	AS028	1235	3556	1257	M
2014	AS028	1235	3552	1255	M
2015	AS028	1235	3558	1236	M
2016	AS028	1236	3544	1256	M
2017	AS028	1236	3543	1214	M
2018	AS028	1230	3517	1323	M
2019	AS028	1230	3520	1328	S
2020	AS028	1232	3516	1313	M
2021	AS028	1233	3531	1303	M
2022	AS028	1235	3549	1308	M
2023	AS028	1228	3505	1434	L
2024	AS028	1225	3556	1554	M
2025	AS028	1225	3537	1554	M
2026	AS028	1254	3601	0905	M
2027	AS028	1256	3638	0931	M
2028	AS028	1259	3656	0907	S
2029	AS028	1247	3606	1031	S
2030	AS028	1247	3604	1032	S
2031	AS028	1257	3646	1023	M
2032	AS028	1243	3638	1132	
2033	AS028	1317	3654	1152	

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SHIP LOCATIONS - 21 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2034	AS028	1236	3625	1232	
2035	AS028	1238	3623	1207	
2036	AS028	1238	3614	1203	
2037	AS028	1240	3642	1222	
2038	AS028	1241	3645	1214	
2039	AS028	1220	3642	1324	M
2040	AS028	1219	3611	1404	M
2041	AS028	1259	3703	0912	M
2042	AS028	1301	3715	0915	M
2043	AS028	1302	3718	0909	M
2044	AS028	1302	3718	0909	M
2045	AS028	1303	3725	0909	M
2046	AS028	1303	3725	0909	M
2047	AS028	1303	3725	0909	M
2048	AS028	1303	3725	0909	M
2049	AS028	1303	3725	0909	M
2050	AS028	1303	3725	0909	M
2051	AS028	1304	3743	0908	M
2052	AS028	1304	3743	0908	M
2053	AS028	1305	3736	0916	M
2054	AS028	1305	3744	0920	M
2055	AS028	1306	3746	0918	S
2056	AS028	1306	3756	0916	S
2057	AS028	1307	3758	0908	M
2058	AS028	1313	3719	1152	M
2059	AS028	1313	3718	1158	M
2060	AS028	1314	3732	1156	M
2061	AS028	1314	3735	1157	M
2062	AS028	1314	3731	1203	M
2063	AS028	1316	3759	1218	M
2064	AS028	1316	3703	1207	
2065	AS028	1316	3709	1207	
2066	AS028	1317	3722	1210	
2067	AS028	1317	3705	1217	
2068	AS028	1318	3752	1243	
2069	AS028	1319	3726	1225	
2070	AS028	1319	3711	1240	
2071	AS028	1320	3712	1301	
2072	AS028	1321	3703	1301	

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SHIP LOCATIONS - 21 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2073	AS028	1208	3758	1414	L
2074	AS028	1214	3705	1443	M
2075	AS028	1308	3808	0914	M
2076	AS028	1308	3808	0914	M
2077	AS028	1308	3814	0930	M
2078	AS028	1308	3814	0930	M
2079	AS028	1308	3814	0930	M
2080	AS028	1308	3814	0930	M
2081	AS028	1349	3851	0947	M
2082	AS028	1349	3859	0944	M
2083	AS028	1349	3855	0952	M
2084	AS028	1315	3828	1142	M
2085	AS028	1315	3821	1157	M
2086	AS028	1340	3853	1102	M
2087	AS028	1340	3833	1135	L
2088	AS028	1315	3817	1208	M
2089	AS028	1347	3937	0905	M
2090	AS028	1347	3924	0943	M
2091	AS028	1347	3919	0938	M
2092	AS028	1347	3914	0938	M
2093	AS028	1348	3912	0943	M
2094	AS028	1349	3900	0944	M
2095	AS028	1339	3912	1059	M
2096	AS028	1341	3909	1036	L
2097	AS028	1346	3956	1013	M
2098	AS028	1337	3949	1140	
2099	AS028	1337	3927	1125	
2100	AS028	1339	3917	1124	
2101	AS028	1341	3957	1103	

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SHIP LOCATIONS - 21 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2102	AS028	1356	4046	0937	M
2103	AS028	1356	4045	0934	M
2104	AS028	1356	4053	0925	M
2105	AS028	1356	4051	0923	M
2106	AS028	1357	4036	0925	M
2107	AS028	1357	4036	0925	M
2108	AS028	1357	4036	0925	M
2109	AS028	1357	4036	0925	M
2110	AS028	1357	4036	0925	M
2111	AS028	1357	4036	0925	M
2112	AS028	1357	4036	0925	M
2113	AS028	1357	4033	0945	M
2114	AS028	1358	4017	0933	M
2115	AS028	1358	4017	0933	M
2116	AS028	1358	4017	0933	M
2117	AS028	1359	4017	0933	M
2118	AS028	1359	4017	0933	M
2119	AS028	1359	4017	0933	M
2120	AS028	1359	4017	0933	M
2121	AS028	1359	4017	0933	M
2122	AS028	1359	4017	0933	M
2123	AS028	1359	4017	0933	M
2124	AS028	1343	4005	1046	M
2125	AS028	1343	4007	1044	M
2126	AS028	1354	4004	1052	M
2127	AS028	1354	4013	1051	M
2128	AS028	1355	4026	1041	M
2129	AS028	1355	4035	1052	M
2130	AS028	1355	4045	1037	M
2131	AS028	1355	4054	1002	M
2132	AS028	1355	4054	1002	M
2133	AS028	1355	4054	1002	M
2134	AS028	1403	4039	1055	M
2135	AS028	1403	4025	1045	L
2136	AS028	1405	4008	1052	M
2137	AS028	1405	4005	1056	M
2138	AS028	1406	4037	1049	M
2139	AS028	1405	4027	1133	M
2140	AS028	1405	4012	1113	M
2141	AS028	1409	4004	1157	L
2142	AS028	1407	4033	1206	M

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SHIP LOCATIONS - 21 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2143	AS028	1359	4109	0940	M
2144	AS028	1359	4107	0932	M
2145	AS028	1400	4128	0925	M
2146	AS028	1400	4128	0925	M
2147	AS028	1400	4128	0925	M
2148	AS028	1400	4135	0938	M
2149	AS028	1401	4147	1005	L
2150	AS028	1402	4155	1018	M
2151	AS028	1402	4150	1018	M
2152	AS028	1442	4142	1013	
2153	AS028	1442	4147	1005	
2154	AS028	1358	4107	1043	M
2155	AS028	1358	4111	1034	M
2156	AS028	1401	4104	1106	M
2157	AS028	1404	4105	1115	M
2158	AS028	1438	4228	0951	M
2159	AS028	1439	4241	0944	M
2160	AS028	1439	4225	0949	M
2161	AS028	1440	4228	0927	M
2162	AS028	1441	4213	0928	M
2163	AS028	1441	4213	0928	M
2164	AS028	1441	4213	0928	M
2165	AS028	1441	4213	0928	M
2166	AS028	1441	4207	0934	M
2167	AS028	1441	4207	0934	M
2168	AS028	1442	4200	0950	
2169	AS028	1444	4237	0926	M
2170	AS028	1444	4237	0926	M
2171	AS028	1444	4259	0920	M
2172	AS028	1444	4259	0920	M
2173	AS028	1444	4259	0920	M
2174	AS028	1444	4259	0920	M
2175	AS028	1436	4244	1018	M
2176	AS028	1437	4230	1014	M
2177	AS028	1437	4228	1016	M
2178	AS028	1438	4239	1002	M
2179	AS028	1438	4228	1006	M
2180	AS028	1431	4252	1115	M
2181	AS029	1428	4340	0255	L

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SHIP LOCATIONS - 21 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2182	AS029	1431	4332	0358	M
2183	AS029	1429	4344	0326	M
2184	AS029	1432	4345	0444	N
2185	AS029	1432	4345	0444	M
2186	AS029	1432	4345	0444	M
2187	AS029	1432	4345	0444	S
2188	AS029	1432	4345	0444	S
2189	AS029	1432	4345	0444	S
2190	AS029	1434	4336	0426	M
2191	AS029	1434	4337	0414	M
2192	AS029	1436	4330	0453	M
2193	AS029	1436	4330	0453	S
2194	AS029	1436	4330	0453	S
2195	AS029	1434	4340	0500	S
2196	AS029	1436	4331	0502	S
2197	AS029	1437	4342	0537	M
2198	AS029	1437	4333	0506	M
2199	AS029	1441	4338	0538	M
2200	AS029	1441	4338	0538	M
2201	AS029	1441	4338	0538	M
2202	AS029	1441	4336	0526	M
2203	AS029	1441	4353	0626	M
2204	AS029	1443	4340	0634	L
2205	AS029	1443	4340	0634	S
2206	AS029	1443	4340	0634	M
2207	AS029	1447	4356	0708	S
2208	AS029	1452	4351	0823	M
2209	AS029	1452	4351	0823	M
2210	AS029	1453	4355	0855	M
2211	AS029	1454	4340	0806	L
2212	AS029	1454	4344	0832	L
2213	AS029	1455	4347	0848	S

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2214	AS029	1054	4327	0912	M
2215	AS029	1054	4327	0912	M
2216	AS029	1056	4338	0934	M
2217	AS029	1056	4343	0935	M
2218	AS029	1056	4334	0945	M
2219	AS028	1058	4344	0946	M
2220	AS028	1058	4320	0956	M
2221	AS028	1052	4336	0909	S
2222	AS028	1052	4323	0921	S
2223	AS028	1052	4325	0917	M
2224	AS028	1053	4340	0942	M
2225	AS028	1053	4335	0938	M
2226	AS028	1101	4330	0956	L
2227	AS028	1446	4304	0937	M
2228	AS028	1446	4304	0937	M
2229	AS028	1446	4304	0937	M
2230	AS028	1446	4304	0937	M
2231	AS028	1446	4304	0937	M
2232	AS028	1447	4309	0952	M
2233	AS028	1447	4316	0941	M
2234	AS028	1447	4327	0914	S
2235	AS028	1447	4327	0914	S
2236	AS028	1447	4327	0914	S
2237	AS028	1447	4327	0914	S
2238	AS028	1447	4327	0914	S
2239	AS028	1447	4327	0914	S
2240	AS028	1447	4327	0914	S
2241	AS028	1447	4327	0914	S
2242	AS028	1447	4327	0914	S
2243	AS028	1447	4327	0914	S
2244	AS028	1447	4327	0914	S
2245	AS028	1447	4327	0914	S
2246	AS028	1447	4327	0914	S
2247	AS028	1447	4327	0914	S
2248	AS028	1447	4327	0914	S
2249	AS028	1447	4327	0914	S
2250	AS028	1448	4319	0918	M
2251	AS028	1448	4319	0918	M
2252	AS028	1450	4353	0901	M
2253	AS028	1450	4357	0907	M
2254	AS028	1058	4324	1002	L
2255	AS028	1131	4322	1559	M

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2256	AS029	1422	4415	0302	S
2257	AS029	1424	4424	0356	S
2258	AS029	1424	4424	0356	S
2259	AS029	1436	4428	0354	S
2260	AS029	1436	4428	0354	S
2261	AS029	1436	4428	0354	S
2262	AS029	1436	4428	0354	S
2263	AS029	1436	4428	0354	S
2264	AS029	1422	4428	0417	L
2265	AS029	1422	4428	0417	M
2266	AS029	1424	4421	0414	M
2267	AS029	1430	4450	0456	M
2268	AS029	1434	4431	0525	M
2269	AS029	1441	4446	0610	S
2270	AS029	1443	4417	0702	S
2271	AS029	1447	4447	0731	M
2272	AS029	1448	4450	0751	S
2273	AS029	1448	4450	0751	S
2274	AS028	1055	4456	0848	M
2275	AS028	1055	4454	0850	M
2276	AS029	1447	4420	0812	M
2277	AS029	1447	4420	0812	M
2278	AS029	1448	4448	0802	M
2279	AS029	1448	4448	0802	M
2280	AS029	1448	4448	0802	M
2281	AS029	1448	4448	0802	S
2282	AS029	1448	4448	0802	S
2283	AS029	1448	4416	0812	M
2284	AS029	1448	4416	0812	M
2285	AS029	1448	4416	0812	M
2286	AS029	1448	4426	0821	M
2287	AS029	1448	4426	0821	M
2288	AS029	1448	4426	0821	S
2289	AS029	1449	4410	0805	M
2290	AS029	1449	4410	0805	M
2291	AS029	1449	4418	0832	L
2292	AS029	1452	4431	0844	M
2293	AS029	1452	4431	0844	M
2294	AS029	1452	4424	0848	L
2295	AS029	1452	4405	0832	M

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SHIP LOCATIONS - 21 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2296	AS028	1106	4406	1200	S
2297	AS028	1106	4406	1200	S
2298	AS028	1124	4433	1538	L
2299	AS029	1413	4516	0236	S
2300	AS029	1413	4516	0236	S
2301	AS029	1413	4529	0215	L
2302	AS029	1420	4533	0210	M
2303	AS029	1404	4546	0352	M
2304	AS029	1404	4546	0352	M
2305	AS029	1406	4551	0344	S
2306	AS029	1406	4544	0345	M
2307	AS029	1409	4558	0300	M
2308	AS029	1409	4523	0342	M
2309	AS029	1428	4511	0316	L
2310	AS029	1428	4501	0327	L
2311	AS029	1431	4501	0433	S
2312	AS029	1401	4541	0421	S
2313	AS029	1401	4541	0421	S
2314	AS029	1402	4548	0405	L
2315	AS029	1402	4513	0713	S
2316	AS029	1344	4537	0752	L
2317	AS029	1344	4537	0752	L
2318	AS029	1344	4532	0735	L
2319	AS029	1344	4532	0735	L
2320	AS029	1344	4532	0735	S
2321	AS029	1346	4528	0736	M
2322	AS029	1447	4510	0735	S
2323	AS029	1447	4510	0735	S
2324	AS029	1447	4510	0735	S
2325	AS029	1447	4510	0735	M
2326	AS029	1447	4510	0740	M
2327	AS029	1447	4510	0740	L
2328	AS029	1447	4504	0745	L
2329	AS029	1447	4504	0745	L
2330	AS029	1447	4500	0752	M
2331	AS029	1448	4520	0743	M
2332	AS029	1448	4520	0743	L
2333	AS029	1449	4519	0735	M
2334	AS029	1449	4519	0735	M

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SHIP LOCATIONS - 21 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2335	AS029	1338	4555	0857	S
2336	AS029	1339	4550	0850	S
2337	AS029	1339	4550	0850	S
2338	AS029	1343	4529	0808	L
2339	AS029	1343	4512	0843	M
2340	AS029	1343	4514	0815	L
2341	AS029	1345	4512	0809	M
2342	AS029	1345	4512	0809	M
2343	AS029	1345	4516	0843	M
2344	AS029	1345	4518	0800	M
2345	AS029	1346	4516	0803	L
2346	AS029	1346	4516	0803	L
2347	AS029	1346	4516	0803	M
2348	AS029	1346	4516	0803	M
2349	AS029	1346	4516	0803	M
2350	AS029	1346	4516	0803	M
2351	AS029	1346	4516	0803	M
2352	AS029	1346	4516	0803	M
2353	AS029	1346	4516	0803	S
2354	AS029	1346	4516	0803	S
2355	AS029	1346	4516	0803	S
2356	AS029	1448	4506	0804	L
2357	AS029	1448	4506	0804	L
2358	AS029	1334	4547	0949	S
2359	AS029	1338	4543	0906	L
2360	AS029	1338	4517	0957	M
2361	AS029	1333	4514	1043	S
2362	AS029	1333	4537	1015	S
2363	AS029	1333	4515	1038	M
2364	AS029	1336	4522	1016	M
2365	AS029	1336	4522	1016	M
2366	AS029	1336	4522	1016	M
2367	AS029	1336	4522	1016	M
2368	AS029	1336	4522	1016	S
2369	AS029	1336	4522	1016	S
2370	AS029	1338	4517	1007	L
2371	AS029	1334	4515	1107	S
2372	AS029	1334	4511	1109	S
2373	AS029	1329	4543	1224	S
2374	AS029	1312	4554	1326	M
2375	AS029	1322	4504	1316	S

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SHIP LOCATIONS - 21 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2376	AS027	1431	4546	1756	L
2377*	AS025	1200	4548	1935	
2378	AS027	1343	4546	2202	M
2379	AS027	1333	4557	2401	M
2380	AS027	1333	4557	2401	M
2381	AS027	1310	4542	2848	M
2382	AS029	1409	4612	0230	M
2383	AS029	1410	4609	0223	L
2384	AS029	1413	4632	0233	S
2385	AS029	1413	4617	0219	S
2386	AS029	1413	4610	0212	S
2387	AS029	1413	4642	0227	S
2388	AS029	1405	4629	0347	S
2389	AS029	1405	4614	0342	S
2390	AS029	1407	4640	0331	M
2391	AS029	1407	4640	0331	M
2392	AS029	1407	4640	0331	S
2393	AS029	1407	4640	0331	S
2394	AS029	1407	4640	0331	S
2395	AS029	1408	4645	0314	S
2396	AS029	1408	4636	0333	S
2397	AS029	1409	4651	0340	M
2398	AS029	1409	4651	0340	M
2399	AS029	1409	4651	0340	S
2400	AS029	1409	4651	0340	S
2401	AS029	1412	4649	0339	M
2402	AS029	1412	4649	0339	M
2403	AS029	1401	4620	0439	S
2404	AS029	1401	4628	0420	S
2405	AS029	1404	4657	0435	M
2406	AS029	1407	4657	0421	S
2407	AS029	1357	4634	0536	S
2408	AS029	1357	4613	0511	S
2409	AS029	1356	4620	0610	S
2410	AS029	1233	4654	0653	S
2411	AS029	1233	4654	0653	S
2412	AS029	1233	4654	0653	S

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2413	AS029	1235	4640	0735	L
2414	AS029	1236	4634	0721	L
2415	AS029	1236	4634	0721	M
2416	AS029	1236	4636	0708	M
2417	AS029	1236	4636	0708	M
2418	AS029	1238	4638	0759	L
2419	AS029	1344	4630	0753	S
2420	AS029	1344	4630	0753	S
2421	AS029	1346	4600	0719	M
2422	AS029	1346	4600	0719	L
2423	AS029	1346	4600	0719	L
2424	AS029	1346	4600	0719	L
2425	AS029	1238	4640	0822	M
2426	AS029	1238	4640	0822	M
2427	AS029	1333	4601	0957	S
2428	AS029	1337	4622	0948	M
2429	AS029	1247	4641	1016	S
2430	AS029	1332	4613	1002	S
2431	AS029	1332	4610	1016	S
2432	AS029	1332	4630	1043	S
2433	AS029	1333	4600	1004	S
2434	AS029	1355	4638	1140	L
2435	AS029	1324	4628	1159	M
2436	AS029	1305	4646	1226	M
2437	AS029	1328	4629	1205	L
2438	AS029	1259	4646	1233	M
2439	AS029	1305	4646	1352	M
2440	AS029	1305	4623	1330	L
2441	AS029	1308	4621	1344	M
2442	AS029	1308	4611	1327	S
2443	AS029	1311	4615	1317	S
2444	AS029	1311	4611	1313	S
2445	AS029	1311	4606	1310	S
2446	AS029	1308	4644	1444	S
2447*	AS025	1200	4608	2012	
2448*	AS025	1200	4607	2156	

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SHIP LOCATIONS - 21 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2449	AS027	1340	4600	2207	M
2450	AS029	1225	4742	0453	M
2451	AS029	1225	4742	0453	S
2452	AS029	1225	4742	0453	S
2453	AS029	1225	4742	0453	S
2454	AS029	1404	4711	0454	S
2455	AS029	1404	4711	0454	S
2456	AS029	1404	4702	0447	M
2457	AS029	1408	4715	0406	L
2458	AS029	1220	4759	0557	M
2459	AS029	1220	4759	0557	S
2460	AS029	1223	4736	0556	M
2461	AS029	1223	4730	0548	M
2462	AS029	1223	4741	0536	S
2463	AS029	1225	4745	0501	M
2464	AS029	1225	4740	0500	M
2465	AS029	1225	4740	0500	M
2466	AS029	1226	4722	0555	M
2467	AS029	1400	4705	0510	M
2468	AS029	1400	4705	0510	M
2469	AS029	1233	4700	0622	L
2470	AS029	1228	4704	0632	M
2471	AS029	1228	4704	0632	M
2472	AS029	1228	4704	0632	M
2473	AS029	1228	4704	0632	M
2474	AS029	1226	4721	0620	M
2475	AS029	1226	4721	0620	M
2476	AS029	1226	4721	0620	M
2477	AS029	1226	4721	0620	M
2478	AS029	1226	4721	0620	M
2479	AS029	1226	4721	0620	M
2480	AS029	1226	4721	0620	M
2481	AS029	1226	4721	0620	M
2482	AS029	1223	4754	0616	M
2483	AS029	1223	4736	0614	M
2484	AS029	1220	4756	0624	M

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2485	AS029	1207	4756	0756	M
2486	AS029	1207	4756	0756	M
2487	AS029	1207	4756	0756	M
2488	AS029	1207	4756	0756	M
2489	AS029	1226	4715	0700	L
2490	AS029	1226	4715	0700	L
2491	AS029	1233	4714	0700	M
2492	AS029	1233	4714	0700	M
2493	AS029	1234	4716	0736	M
2494	AS029	1234	4716	0736	M
2495	AS029	1234	4740	0746	S
2496	AS029	1234	4729	0800	M
2497	AS029	1240	4719	0902	S
2498	AS029	1247	4758	0952	S
2499	AS029	1246	4716	1024	L
2500	AS029	1246	4709	1005	M
2501	AS029	1247	4728	1030	S
2502	AS029	1247	4740	1045	L
2503	AS029	1247	4742	1029	S
2504	AS029	1247	4747	1008	S
2505	AS029	1247	4721	1036	L
2506	AS029	1249	4719	1051	S
2507	AS029	1252	4716	1134	L
2508	AS029	1252	4718	1122	M
2509	AS029	1252	4757	1107	M
2510	AS029	1257	4704	1219	M
2511	AS029	1257	4749	1209	M
2512	AS029	1259	4703	1223	M
2513	AS029	1259	4714	1206	S
2514	AS029	1301	4726	1226	S
2515	AS029	1301	4748	1203	L
2516	AS029	1308	4701	1438	M
2517	AS027	1441	4701	1558	M
2518	AS025	1118	4741	1549	
2519*	AS025	1200	4753	1612	
2520*	AS025	1200	4722	2037	
2521*	AS025	1200	4730	2043	

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SHIP LOCATIONS - 21 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2522	AS029	1219	4843	0446	M
2523	AS029	1219	4844	0436	L
2524	AS029	1219	4840	0458	S
2525	AS029	1219	4840	0458	S
2526	AS029	1225	4842	0453	M
2527	AS029	1215	4850	0525	M
2528	AS029	1216	4848	0526	M
2529	AS029	1216	4859	0554	L
2530	AS029	1216	4859	0554	L
2531	AS029	1219	4838	0506	S
2532	AS029	1220	4829	0531	S
2533	AS029	1220	4829	0531	S
2534	AS029	1220	4829	0531	S
2535	AS029	1220	4824	0526	S
2536	AS029	1220	4824	0526	S
2537	AS029	1220	4834	0518	S
2538	AS029	1221	4808	0546	M
2539	AS029	1221	4808	0546	M
2540	AS029	1221	4802	0546	M
2541	AS029	1223	4801	0543	S
2542	AS029	1223	4801	0543	S
2543	AS029	1209	4853	0637	M
2544	AS029	1218	4848	0638	S
2545	AS029	1205	4842	0732	S
2546	AS029	1207	4806	0722	M
2547	AS029	1207	4828	0724	M
2548	AS029	1207	4828	0724	M
2549	AS029	1209	4848	0708	M
2550	AS029	1209	4848	0708	M
2551	AS029	1209	4831	0716	M
2552	AS029	1207	4822	0842	L
2553	AS029	1207	4822	0842	L
2554	AS029	1207	4814	0830	M
2555	AS029	1207	4814	0830	S
2556	AS029	1235	4809	0840	M
2557	AS029	1236	4809	0824	L
2558	AS029	1238	4808	0822	S
2559	AS029	1238	4808	0822	S
2560	AS029	1238	4808	0822	S
2561	AS029	1238	4808	0822	S
2562	AS029	1240	4834	0851	S

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SHIP LOCATIONS - 21 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2563	AS029	1200	4815	0934	L
2564	AS029	1201	4823	0946	M
2565	AS029	1203	4838	0926	M
2566	AS029	1203	4835	0948	L
2567	AS029	1158	4846	1011	M
2568	AS029	1200	4856	1056	L
2569	AS029	1200	4856	1056	S
2570	AS029	1200	4837	1026	M
2571	AS029	1251	4806	1025	M
2572	AS029	1251	4808	1053	L
2573	AS027	1122	4850	1142	M
2574	AS027	1507	4834	1150	M
2575	AS027	1508	4804	1102	M
2576	AS027	1509	4823	1123	S
2577	AS027	1509	4823	1123	S
2578	AS027	1509	4823	1123	S
2579	AS027	1509	4823	1123	S
2580	AS027	1509	4823	1123	S
2581	AS027	1509	4823	1123	S
2582	AS027	1509	4823	1123	S
2583	AS027	1509	4823	1123	S
2584	AS027	1509	4823	1123	S
2585	AS027	1509	4823	1123	S
2586	AS027	1509	4823	1123	S
2587	AS027	1509	4823	1123	S
2588	AS027	1509	4823	1123	S
2589	AS027	1509	4823	1123	S
2590	AS027	1509	4823	1123	S
2591	AS027	1136	4807	1324	M
2592*	AS025	1200	4849	1616	400 ft
2593*	AS025	1200	4824	1653	
2594*	AS025	1200	4800	1634	

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2595	AS025	1205	4849	1713	
2596	AS025	1217	4825	1720	
2597	AS025	1340	4818	1714	S
2598	AS025	1340	4818	1714	S
2599	AS025	1340	4818	1714	S
2600	AS025	1340	4818	1714	S
2601	AS025	1340	4818	1714	S
2602	AS025	1340	4818	1714	S
2603	AS025	1340	4818	1714	S
2604	AS025	1240	4818	1714	S
2605	AS025	1240	4818	1714	S
2606	AS025	1240	4818	1714	S
2607	AS025	1240	4818	1714	S
2608	AS025	1240	4818	1714	S
2609	AS025	1240	4818	1714	S
2610	AS025	1240	4818	1714	S
2611	AS025	1240	4818	1714	S
2612	AS025	1240	4818	1714	S
2613	AS025	1240	4818	1714	S
2614	AS025	1240	4818	1714	S
2615	AS025	1240	4818	1714	S
2616	AS025	1240	4818	1714	S
2617	AS025	1205	4807	1812	
2618*	AS025	1200	4841	1909	S
2619*	AS025	1200	4841	2030	
2620	AS027	1207	4845	2052	M
2621	AS029	1218	4909	0443	M
2622	AS029	1215	4950	0515	M
2623	AS029	1215	4949	0544	L
2624	AS029	1215	4948	0527	M
2625	AS029	1215	4948	0527	M
2626	AS029	1215	4948	0527	M
2627	AS029	1216	4954	0513	L
2628	AS029	1216	4954	0513	L
2629	AS029	1209	4957	0656	L
2630	AS029	1209	4957	0656	M
2631	AS029	1209	4949	0658	M
2632	AS029	1209	4949	0658	M
2633	AS029	1213	4950	0616	M
2634	AS029	1213	4954	0653	L

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2635	AS029	1203	4954	0752	L
2636	AS029	1204	4938	0743	M
2637	AS029	1204	4927	0716	L
2638	AS029	1205	4933	0735	M
2639	AS029	1205	4921	0738	S
2640	AS029	1205	4904	0740	M
2641	AS029	1205	4942	0738	M
2642	AS029	1206	4930	0705	S
2643	AS029	1155	4955	0810	S
2644	AS029	1155	4909	0844	L
2645	AS029	1201	4954	0846	L
2646	AS029	1201	4954	0846	M
2647	AS029	1201	4950	0826	M
2648	AS029	1204	4958	0833	M
2649	AS029	1204	4958	0833	M
2650	AS029	1204	4958	0833	M
2651	AS029	1204	4951	0850	M
2652	AS029	1205	4937	0844	S
2653	AS029	1205	4944	0830	S
2654	AS029	1205	4944	0830	S
2655	AS029	1205	4944	0830	S
2656	AS029	1158	4906	0944	S
2657	AS029	1203	4952	0913	M
2658	AS029	1155	4924	1038	M
2659	AS029	1158	4913	1015	S
2660	AS029	1158	4955	1037	L
2661	AS029	1158	4920	1043	L
2662	AS029	1200	4924	1046	L
2663	AS027	1121	4949	1044	M
2664	AS027	1121	4949	1044	M
2665	AS027	1121	4949	1044	M
2666	AS027	1122	4912	1053	M
2667	AS027	1117	4940	1201	M
2668	AS027	1118	4927	1219	M
2669	AS027	1121	4908	1234	M
2670	AS025	1433	4930	1325	
2671*	AS025	1200	4938	1458	
2672*	AS025	1200	4905	1648	
2673*	AS025	1200	4937	1631	L

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SHIP LOCATIONS - 21 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2674*	AS025	1200	4927	1730	
2675*	AS025	1200	4935	2027	
2676	AS027	1213	4953	2043	S
2677	AS027	1213	4953	2043	S
2678*	AS025	1200	4934	2106	
2679*	AS025	1200	4913	2245	
2680	AS027	1218	4915	2314	M
2681	AS027	1218	4905	2302	M
2682	AS027	1224	4942	2352	M
2683	AS027	1240	4903	2714	M
2684	AS029	1215	5002	0557	S
2685	AS029	1133	5024	0653	M
2686	AS029	1133	5001	0653	M
2687	AS029	1133	5018	0631	M
2688	AS029	1213	5001	0614	M
2689	AS029	1213	5002	0649	L
2690	AS029	1142	5008	0840	S
2691	AS029	1142	5008	0840	S
2692	AS029	1201	5004	0826	M
2693	AS029	1204	5004	0905	L
2694	AS029	1155	5000	1037	S
2695	AS027	1119	5013	1054	M
2696	AS027	1119	5013	1054	M
2697	AS027	1119	5013	1054	M
2698	AS027	1119	5014	1128	M
2699	AS027	1117	5000	1300	M
2700	AS025	1433	5019	1332	
2701*	AS025	1200	5015	1557	
2702*	AS025	1200	5017	1743	497 ft
2703	AS024	1157	5056	2011	
2704*	AS024	1200	5012	2032	

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2705	AS027	1215	5004	2154	M
2706*	AS024	1200	5049	2208	550 ft
2707	AS026	1038	5030	2625	S
2708	AS026	1030	5039	2725	M
2709	AS029	1133	5109	0811	L
2710	AS029	1135	5125	0802	S
2711	AS029	1135	5114	0815	M
2712	AS029	1138	5115	0854	S
2713	AS029	1138	5115	0854	S
2714	AS029	1138	5119	0845	S
2715	AS029	1138	5139	0822	S
2716	AS029	1142	5114	0848	M
2717	AS029	1143	5124	0848	M
2718	AS029	1142	5123	0902	S
2719	AS029	1142	5123	0902	S
2720	AS029	1142	5127	0902	S
2721	AS029	1142	5127	0902	S
2722	AS029	1143	5123	0900	M
2723	AS029	1146	5115	0942	M
2724	AS027	1102	5139	1116	M
2725	AS027	1107	5103	1123	M
2726	AS027	1106	5101	1213	M
2727	AS023	0848	5151	1250	
2728*	AS023	1200	5104	1340	120 ft
2729*	AS023	1200	5128	1424	150 ft
2730*	AS023	1200	5137	1408	140 ft
2731*	AS023	1200	5139	1428	140 ft
2732*	AS024	1200	5104	1948	760 ft
2733*	AS024	1200	5112	1958	213 ft
2734	AS027	1053	5247	1156	M
2735	AS027	1053	5247	1156	M
2736	AS027	1056	5228	1157	M
2737	AS027	1059	5201	1114	M
2738	AS027	1059	5203	1107	M

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2739	AS027	1052	5257	1220	M
2740	AS027	1055	5245	1250	M
2741	AS027	1055	5245	1250	M
2742	AS027	1055	5245	1250	M
2743	AS027	1055	5230	1225	M
2744	AS027	1055	5230	1225	M
2745	AS027	1055	5238	1246	M
2746	AS027	1055	5226	1230	M
2747	AS027	1056	5224	1206	M
2748	AS027	1056	5252	1301	M
2749	AS027	1056	5252	1301	M
2750	AS027	1057	5258	1321	M
2751	AS027	1100	5227	1318	M
2752	AS027	1103	5216	1323	M
2753*	AS023	1200	5200	1334	100 ft
2754*	AS023	1200	5202	1403	450 ft
2755	AS023	1515	5225	1811	
2756	AS025	0726	5258	1840	
2757*	AS024	1200	5206	1904	222 ft
2758	AS024	0752	5230	1951	
2759	AS024	0753	5250	2132	
2760	AS024	1404	5253	2320	
2761	AS024	1404	5259	2325	
2762	AS027	1045	5349	1136	
2763	AS027	1045	5359	1139	
2764	AS027	1045	5259	1139	
2765	AS027	1048	5320	1153	
2766	AS027	1048	5332	1224	
2767	AS027	1048	5318	1203	
2768	AS027	1051	5333	1248	
2769	AS027	1051	5321	1232	
2770	AS027	1052	5313	1244	
2771	AS027	1057	5305	1313	
2772	AS027	1059	5306	1330	
2773*	AS022	1151	5321	1338	
2774*	AS022	1200	5339	1333	

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2775*	AS023	1200	5309	1543	350 ft
2776*	AS023	1200	5309	1543	285 ft
2777	AS024	1413	5316	2147	
2778	AS024	1404	5311	2335	
2779	AS024	1405	5322	2347	
2780	AS024	1415	5327	2453	
2781	AS022T	0754	5432	0938	
2782	AS022T	0800	5432	0953	
2783	AS022T	0800	5432	0953	
2784	AS027	1038	5435	1029	M
2785	AS027	1038	5435	1000	M
2786	AS027	1040	5415	1107	M
2787	AS027	1043	5411	1121	S
2788	AS027	1046	5443	1153	M
2789	AS022	1047	5443	1250	
2790*	AS022	1200	5405	1241	370 ft
2791	AS022	1030	5408	1255	
2792*	AS022	1200	5442	1410	362 ft
2793	AS025	0711	5417	1843	
2794	AS026	1206	5457	1938	M
2795	AS026	1206	5457	1938	M
2796	AS023	0755	5537	0646	
2797	AS023	0756	5551	0650	
2798	AS023	0800	5553	0651	
2799	AS023	1615	5552	0758	
2800	AS023	1609	5553	0849	
2801	AS023	0805	5507	0917	
2802	AS027	1030	5522	0958	M
2803	AS022	1012	5502	0930	
2804	AS026	1304	5534	0910	S
2805	AS026	1310	5539	0905	S

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SHIP LOCATIONS - 21 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2806*	AS022	1200	5544	1034	M S
2807	AS027	1031	5552	1017	
2808	AS026	1307	5507	1000	
2809	AS022T	0744	5550	1115	
2810	AS022	1018	5542	1110	
2811	AS022	1020	5526	1230	
2812*	AS022	1200	5520	1315	S L
2813	AS026	1235	5532	1404	
2814	AS026	1225	5539	1525	
2815	AS025	0711	5513	1733	
2816	AS024	0709	5559	1946	
2817	AS024	1425	5512	1956	
2818	AS025	0650	5548	2008	
2819	AS024	1440	5527	2113	
2820	AS026	0932	5543	2512	
2821	AS026	0932	5555	2516	M M
2822	AS022T	0941	5604	0645	
2823	AS023	0755	5623	0749	
2824	AS023	0756	5622	0746	
2825	AS023	0757	5624	0751	
2826	AS023	0757	5638	0713	
2827	AS023	0758	5646	0715	
2828	AS023	0758	5647	0712	
2829	AS023	0759	5637	0715	
2830*	AS022	1200	5625	0826	
2831	AS022	1024	5627	0906	
2832	AS026	1340	5600	0933	S
2833	AS026	0845	5647	1343	M
2834	AS026	1232	5617	1407	M

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SHIP LOCATIONS - 21 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2835	AS026	0855	5604	1544	M
2836	AS025	0651	5651	1830	
2837	AS025	0654	5632	1804	
2838	AS024	0700	5641	1948	
2839	AS025	0644	5634	2005	
2840	AS024	0700	5649	2134	
2841	AS024	0702	5632	2203	
2842	AS024	1446	5609	2240	
2843	AS024	1444	5607	2313	
2844	AS024	1453	5643	2401	
2845	AS026	0936	5637	2607	M
2846	AS026	1253	5745	0926	M
2847	AS023	1614	5703	0911	
2848*	AS022	1200	5711	1208	
2849	AS026	0836	5735	1235	L
2850	AS026	0844	5708	1336	M
2851	AS026	0847	5701	1427	S
2852	AS024	0700	5700	2153	
2853	AS024	1453	5709	2251	
2854	AS024	1453	5726	2232	
2855	AS024	1453	5734	2212	
2856	AS024	1507	5743	2257	
2857	AS026	0821	5816	0746	M
2858	AS026	0821	5816	0746	M
2859	AS026	0821	5816	0746	M
2860	AS026	0821	5836	0808	M
2861	AS026	0822	5811	0856	S
2862	AS026	0822	5838	0904	M

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SHIP LOCATIONS - 21 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2863	AS026	0828	5829	1132	M
2864	AS024	0654	5803	2120	
2865	AS025	0629	5801	2139	
2866	AS024	1506	5810	2208	
2867	AS024	1506	5829	2240	
2868	AS024	1512	5813	2242	
2869	AS024	0648	5956	2148	
2870	AS024	1526	5946	2201	
2871	AS024	1549	6205	2134	
2872	AS024	0609	6239	2224	
2873	AS024	0613	6228	2200	
2874	AS024	1553	6246	2251	

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SHIP LOCATIONS - 21 August 1973

The following ships were outside the region of 1° x 1° cells that were fully surveyed.

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
2875	AS029	1420	4452	0156	S
2876	AS029	1420	4452	0156	S
2877	AS029	1420	4452	0156	S
2878	AS029	1420	4452	0156	S
2879	AS029	1421	4429	0156	M
2880	AS029	1423	4402	0140	M
2881	AS029	1424	4418	0154	S
2882	AS029	1424	4418	0154	S
2883	AS027	1348	4456	2212	M
2884	AS029	1420	4503	0154	M
2885	AS029	1420	4508	0154	L
2886	AS029	1423	4507	0146	L
2887	AS029	1423	4508	0148	L
2888	AS029	1423	4517	0133	L
2889	AS029	1407	4705	0336	L
2890	AS029	1135	5130	0753	M
2891	AS029	1138	5134	0756	M
2892	AS026	1000	5424	2922	S
2893	AS026	0950	5544	2936	M
2894	AS026	0950	5544	2936	M
2895	AS026	0833	5811	1232	S
2896	AS026	0834	5847	1226	S
2897	AS026	0842	5803	1407	S
2898	AS024	0657	5825	1934	
2899	AS024	1514	5848	2341	

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SHIP ATTRIBUTES - 21 August 1973

Ship Designation	Ship Name	Nationality and Type	Speed (Knots)		Course (°)		Length (ft)	
			Publication	Visual	Calculated	Visual	Publication	Visual
2377					12.2			
2447					14.2			
2448					22.1			
2519					DIW			
2520					15.0			
2521					15.5			
2592					14.0			
2593		Merchant		10	15.6	070		400
2594				DIW	DIW			
2618		Russian ELINT Trawler						
2619					12.8			
2671					17.4			
2672					15.0			
2673		Tanker			14.1			
2674					16.9			
2675					10.8			
2678					7.8			
2679					16.0			
2701					18.4			
2702	Malte-sholn	Finnish Cargo		7	16.3	255	497	
2704								
2706		Tanker		18	8.0			550
2728		Trawler		DIW	17.8	260		120
2729		Trawler		DIW	5.1			150
2730		Trawler		DIW				140
2731		Trawler		DIW				140
2732	Dart America Chain	Cargo		15		285	760	600
2733		SQUARE DEAL Ship	12	5		175	213	150

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SHIP ATTRIBUTES - 21 August 1973

Ship Designation	Ship Name	Nationality and Type	Speed (knots)		Course (°)		Length (ft)	
			Publication	Visual	Calculated	Visual	Publication	Visual
2753	Khariton Laptev	Trawler		DIW	17.3	110	222	100
2754		Freighter		18		050		450
2757		Russian Research		14				150
2773	Kane Neptune Myer	Soviet AGI SQUARE DEAL Ship	14.5 14 14	DIW DIW DIW 4	13.0		285 370 362	350 360 250
2774					15.1			
2775					7.5			
2776					7.5			
2790					3.7			
2792					3.4	140		
2806					20.2			
2812					15.9			
2830					4.1			
2848					19.4			

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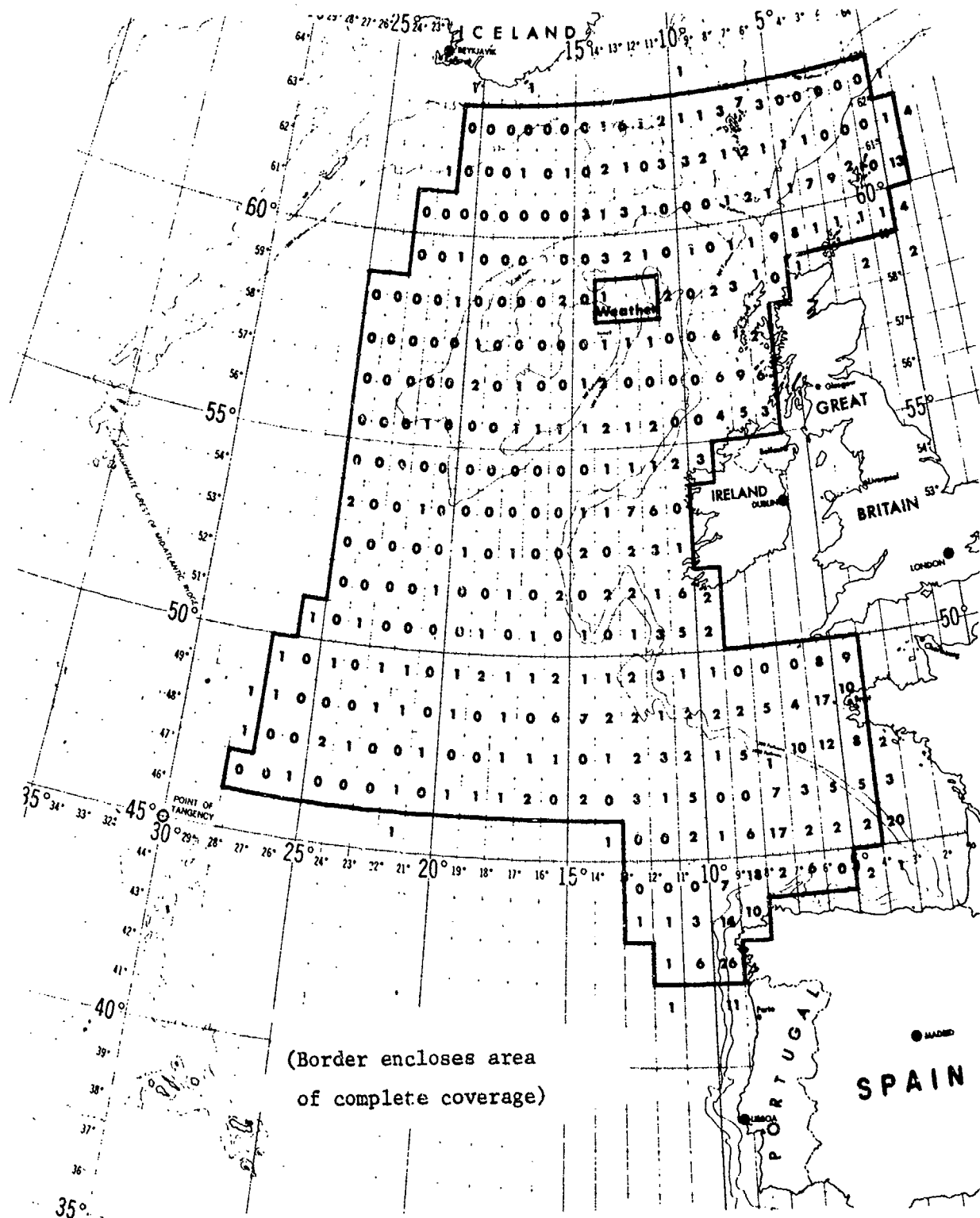


FIGURE A3(C) -- Ship Counts on 29 August 73(U)

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SHIP LOCATIONS - 29 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3001	AS039	1309	4247	0949	S
3002	AS039	1309	4225	0947	S
3003	AS039	1310	4250	0944	S
3004	AS039	1310	4250	0944	S
3005	AS039	1310	4250	0944	S
3006	AS039	1311	4248	0925	S
3007	AS039	1311	4248	0925	S
3008	AS039	1311	4248	0925	S
3009	AS039	1311	4248	0925	S
3010	AS039	1311	4248	0925	S
3011	AS039	1311	4235	0934	S
3012	AS039	1311	4235	0934	S
3013	AS039	1311	4235	0934	S
3014	AS039	1312	4219	0922	S
3015	AS039	1312	4219	0922	S
3016	AS039	1312	4219	0922	S
3017	AS039	1312	4219	0922	S
3018	AS039	1312	4219	0922	S
3019	AS039	1312	4219	0922	S
3020	AS039	1312	4219	0922	S
3021	AS039	1312	4219	0922	S
3022	AS039	1312	4219	0922	S
3023	AS039	1312	4219	0922	S
3024	AS039	1312	4219	0922	S
3025	AS039	1313	4204	0935	S
3026	AS039	1313	4204	0935	S
3027	AS039	1307	4233	1000	M
3028	AS039	1307	4245	1008	M
3029	AS039	1308	4218	1001	S
3030	AS039	1308	4209	1000	S
3031	AS039	1308	4202	1013	S
3032	AS039	1320	4232	1011	M
3033	AS039	1304	4223	1151	M
3034	AS039	1316	4324	0852	M
3035	AS039	1320	4358	0855	M
3036	AS039	1320	4358	0855	M
3037	AS039	1321	4349	0833	M
3038	AS039	1321	4345	0832	S
3039	AS039	1321	4345	0832	S
3040	AS039	1321	4345	0832	S
3041	AS039	1321	4345	0832	S
3042	AS039	1323	4356	0832	M
3043	AS039	1323	4356	0832	M

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SHIP LOCATIONS - 29 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3044	AS039	1309	4304	0958	S
3045	AS039	1309	4313	0956	M
3046	AS039	1309	4304	0947	S
3047	AS039	1311	4303	0930	S
3048	AS039	1311	4301	0929	S
3049	AS039	1313	4328	0950	L
3050	AS039	1314	4326	0922	M
3051	AS039	1317	4335	0906	M
3052	AS039	1317	4335	0906	M
3053	AS039	1317	4320	0910	M
3054	AS039	1317	4322	0950	M
3055	AS039	1317	4324	0907	M
3056	AS039	1318	4340	0908	M
3057	AS039	1319	4344	0922	M
3058	AS039	1309	4332	1045	M
3059	AS039	1321	4330	1044	M
3060	AS039	1322	4330	1039	M
3061	AS039	1251	4353	1146	M
3062	AS039	1300	4302	1247	M
3063	AS039	1428	4445	0622	M
3064	AS039	1429	4438	0624	S
3065	AS039	1429	4432	0637	M
3066	AS039	1431	4423	0648	M
3067	AS039	1432	4419	0618	M
3068	AS039	1433	4428	0601	M
3069	AS039	1428	4443	0744	M
3070	AS039	1432	4404	0724	M

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SHIP LOCATIONS - 29 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3071	AS039	1322	4404	0852	M
3072	AS039	1322	4404	0852	M
3073	AS039	1322	4402	0846	M
3074	AS039	1322	4404	0844	M
3075	AS039	1325	4415	0838	M
3076	AS039	1325	4415	0838	M
3077	AS039	1325	4423	0848	M
3078	AS039	1329	4438	0829	M
3079	AS039	1331	4443	0824	M
3080	AS039	1332	4456	0825	M
3081	AS039	1428	4450	0802	M
3082	AS039	1428	4450	0811	S
3083	AS039	1430	4443	0810	M
3084	AS039	1430	4448	0816	M
3085	AS039	1430	4450	0821	M
3086	AS039	1430	4449	0824	M
3087	AS039	1430	4440	0824	M
3088	AS039	1430	4442	0822	M
3089	AS039	1320	4403	0921	M
3090	AS039	1321	4407	0932	M
3091	AS039	1321	4407	0910	M
3092	AS039	1325	4432	0927	M
3093	AS039	1326	4438	0908	M
3094	AS039	1326	4447	0929	M
3095	AS039	1335	4459	0940	S
3096	AS039	1441	4531	0411	M
3097	AS039	1444	4550	0423	S
3098	AS039	1435	4530	0532	M
3099	AS039	1438	4534	0504	M
3100	AS039	1424	4523	0632	S
3101	AS039	1448	4557	0608	M

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SHIP LOCATIONS - 29 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3102	AS039	1418	4557	0704	S
3103	AS039	1418	4557	0722	M
3104	AS039	1419	4551	0710	S
3105	AS039	1419	4554	0730	S
3106	AS039	1419	4551	0736	S
3107	AS039	1420	4546	0728	S
3108	AS039	1420	4539	0706	S
3109	AS039	1421	4539	0734	S
3110	AS039	1421	4538	0741	S
3111	AS039	1422	4528	0736	S
3112	AS039	1422	4527	0741	M
3113	AS039	1423	4524	0746	S
3114	AS039	1423	4526	0752	M
3115	AS039	1428	4522	0742	M
3116	AS039	1423	4521	0740	M
3117	AS039	1424	4511	0746	S
3118	AS039	1425	4500	0737	M
3119	AS039	1334	4528	0847	S
3120	AS039	1339	4551	0820	M
3121	AS039	1423	4536	0809	M
3122	AS039	1425	4512	0802	M
3123	AS039	1426	4503	0808	M
3124	AS039	1427	4514	0820	M
3125	AS039	1331	4506	0904	S
3126	AS039	1334	4536	1010	S
3127	AS039	1339	4524	1057	M
3128	AS039	1445	4611	0413	M
3129	AS039	1447	4618	0416	M
3130	AS039	1447	4624	0431	S
3131	AS039	1449	4640	0423	S
3132	AS039	1450	4654	0440	S
3133	AS039	1449	4641	0536	M
3134	AS039	1450	4659	0516	S
3135	AS039	1451	4652	0557	M
3136	AS039	1451	4652	0557	M
3137	AS039	1452	4659	0555	S
3138	AS039	1412	4654	0624	M
3139	AS039	1413	4636	0651	M
3140	AS039	1414	4641	0608	M

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SHIP LOCATIONS - 29 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3141	AS039	1413	4643	0721	M
3142	AS039	1415	4626	0711	M
3143	AS039	1415	4620	0703	S
3144	AS039	1415	4620	0703	S
3145	AS039	1416	4618	0722	M
3146	AS039	1417	4611	0700	M
3147	AS039	1417	4608	0716	M
3148	AS039	1340	4634	1008	M
3149	AS039	1341	4627	1027	S
3150	AS039	1343	4638	1028	S
3151	AS039	1348	4651	1046	S
3152	AS039	1352	4655	1047	S
3153	AS039	1234	4612	1118	M
3154	AS039	1235	4612	1236	M
3155	AS039	1237	4615	1233	M
3156	AS039	1237	4615	1233	S
3157	AS038	1526	4654	1450	M
3158	AS038	1527	4631	1422	M
3159	AS038	1517	4652	1642	S
3160	AS038	1520	4651	1603	M
3161	AS038	1511	4656	1756	M
3162	AS038	1510	4654	1811	S
3163	AS038	1505	4621	1906	M
3164	AS038	1454	4630	2127	S
3165	AS038	1432	4620	2552	M
3166	AS039	1453	4708	0425	S
3167	AS039	1453	4722	0452	M
3168	AS039	1455	4739	0455	S
3169	AS039	1455	4738	0444	S
3170	AS039	1455	4736	0433	M
3171	AS039	1457	4751	0456	M
3172	AS039	1458	4758	0437	M
3173	AS039	1458	4754	0428	S

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SHIP LOCATIONS - 29 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3174	AS039	1408	4758	0553	M
3175	AS039	1408	4753	0556	S
3176	AS039	1408	4749	0558	M
3177	AS039	1452	4707	0537	M
3178	AS039	1454	4724	0548	S
3179	AS039	1455	4727	0552	S
3180	AS039	1455	4731	0527	S
3181	AS039	1457	4738	0558	M
3182	AS039	1458	4749	0553	S
3183	AS039	1458	4752	0547	S
3184	AS039	1458	4752	0547	S
3185	AS039	1458	4752	0547	S
3186	AS039	1404	4741	0657	M
3187	AS039	1405	4751	0640	S
3188	AS039	1409	4735	0604	M
3189	AS039	1409	4735	0604	S
3190	AS039	1409	4735	0604	S
3191	AS039	1411	4726	0607	M
3192	AS039	1411	4722	0600	M
3193	AS039	1411	4713	0612	M
3194	AS039	1411	4702	0625	M
3195	AS039	1412	4703	0636	S
3196	AS039	1402	4729	0749	S
3197	AS039	1347	4714	0836	S
3198	AS039	1349	4709	0815	M
3199	AS039	1351	4755	0848	S
3200	AS039	1401	4722	0804	M
3201	AS039	1412	4718	0808	M
3202	AS039	1346	4720	0908	S
3203	AS039	1353	4730	1054	S
3204	AS039	1355	4747	1057	S
3205	AS039	1223	4742	1134	M
3206	AS039	1225	4734	1120	M
3207	AS039	1225	4759	1106	S
3208	AS039	1221	4738	1210	M
3209	AS039	1229	4724	1231	M
3210	AS039	1219	4702	1335	M

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SHIP LOCATIONS - 29 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3211	AS039	1208	4758	1545	S
3212	AS039	1209	4759	1606	S
3213	AS038	1516	4700	1711	L
3214	AS038	1342	4735	2056	S
3215	AS038	1359	4737	2351	M
3216	AS038	1402	4738	2404	M
3217	AS038	1442	4704	2419	L
3218	AS039	1503	4840	0442	S
3219	AS039	1504	4848	0447	M
3220	AS039	1505	4850	0443	S
3221	AS039	1505	4850	0443	S
3222	AS039	1505	4850	0443	S
3223	AS039	1505	4850	0443	S
3224	AS039	1505	4850	0443	S
3225	AS039	1505	4854	0437	S
3226	AS039	1506	4855	0423	M
3227	AS039	1507	4858	0433	M
3228	AS039	1410	4815	0540	M
3229	AS039	1410	4807	0540	M
3230	AS039	1459	4815	0509	S
3231	AS039	1459	4809	0544	S
3232	AS039	1500	4818	0532	M
3233	AS039	1501	4825	0511	M
3234	AS039	1501	4827	0515	S
3235	AS039	1501	4827	0515	S
3236	AS039	1502	4828	0535	S
3237	AS039	1502	4831	0532	S
3238	AS039	1502	4831	0515	S
3239	AS039	1503	4838	0540	S
3240	AS039	1503	4837	0500	S
3241	AS039	1503	4842	0523	M
3242	AS039	1503	4844	0512	S
3243	AS039	1504	4842	0506	S
3244	AS039	1504	4851	0503	S
3245	AS039	1503	4835	0601	S
3246	AS039	1504	4836	0607	S
3247	AS039	1504	4837	0610	M
3248	AS039	1508	4837	0642	M

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SHIP LOCATIONS - 29 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3249	AS039	1401	4802	0726	M
3250	AS039	1403	4813	0700	S
3251	AS039	1403	4832	0714	S
3252	AS039	1404	4851	0722	S
3253	AS039	1404	4839	0702	S
3254	AS039	1355	4833	0852	S
3255	AS039	1358	4852	0846	M
3256	AS039	1354	4828	0947	M
3257	AS039	1356	4844	0950	M
3258	AS039	1229	4817	1048	M
3259	AS039	1356	4839	1018	S
3260	AS039	1225	4858	1159	S
3261	AS039	1220	4814	1232	S
3262	AS039	1221	4843	1227	S
3263	AS039	1218	4843	1331	S
3264	AS039	1218	4843	1331	S
3265	AS039	1201	4841	1448	M
3266	AS039	1202	4832	1438	M
3267	AS039	1203	4832	1416	M
3268	AS039	1203	4828	1437	S
3269	AS039	1216	4842	1442	M
3270	AS039	1216	4843	1432	S
3271	AS039	1217	4833	1416	M
3272	AS039	1205	4814	1528	M
3273	AS039	1205	4828	1559	S
3274	AS039	1207	4835	1544	S
3275	AS039	1207	4800	1535	S
3276	AS039	1208	4806	1556	S
3277	AS039	1215	4825	1517	M
3278	AS038	1314	4856	1737	M
3279	AS038	1332	4835	1900	S
3280	AS038	1347	4842	2128	S
3281	AS038	1350	4817	2240	M

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SHIP LOCATIONS - 29 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3282	AS038	1412	4823	2616	M
3283	AS039	1508	4900	0410	S
3284	AS039	1509	4924	0456	M
3285	AS039	1508	4905	0407	M
3286	AS039	1509	4926	0455	M
3287	AS039	1509	4907	0408	S
3288	AS039	1510	4902	0402	S
3289	AS039	1510	4905	0401	S
3290	AS039	1512	4915	0401	S
3291	AS039	1512	4946	0446	S
3292	AS039	1506	4905	0528	S
3293	AS039	1506	4904	0544	S
3294	AS039	1508	4923	0500	M
3295	AS039	1509	4927	0514	S
3296	AS039	1511	4944	0515	S
3297	AS039	1511	4947	0526	S
3298	AS039	1513	4955	0500	S
3299	AS039	1513	4954	0528	S
3300	AS039	1227	4956	0934	M
3301	AS039	1129	4938	1034	M
3302	AS039	1134	4915	1118	M
3303	AS039	1135	4902	1104	S
3304	AS039	1142	4908	1124	S
3305	AS039	1137	4958	1202	M
3306	AS039	1140	4937	1244	S
3307	AS039	1154	4908	1343	S
3308	AS039	1155	4901	1422	S
3309	AS039	1155	4927	1522	M
3310	AS039	1158	4906	1537	M
3311	AS038	1309	4956	1638	M
3312	AS038	1304	4928	1738	M
3313	AS038	1259	4927	1852	M
3314	AS038	1301	4949	1815	M

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3315	AS038	1256	4910	1954	S
3316	AS038	1252	4926	2106	S
3317	AS038	1247	4906	2220	M
3318	AS038	1236	4905	2459	S
3319	AS038	1230	4906	2606	S
3320	AS039	1127	5012	0932	M
3321	AS039	1128	5037	0936	S
3322	AS039	1130	5031	1002	S
3323	AS039	1130	5032	1014	S
3324	AS039	1136	5045	1055	M
3325	AS038	1052	5042	1006	S
3326	AS038	1052	5047	1026	M
3327	AS038	1056	5044	1133	S
3328	AS039	1133	5013	1106	M
3329	AS039	1137	5017	1156	M
3330	AS038	1107	5036	1244	L
3331	AS038	1119	5034	1444	M
3332	AS038	1311	5001	1614	S
3333	AS038	1259	5016	1859	S
3334	AS038	1203	5044	2336	L
3335	AS038	1219	5006	2511	M
3336	AS038	1053	5116	0906	M
3337	AS038	1053	5121	0914	M
3338	AS038	1052	5101	1018	S
3339	AS038	1053	5113	1049	M
3340	AS038	1053	5130	1022	S
3341	AS038	1056	5151	1028	M
3342	AS038	1056	5151	1028	M
3343	AS038	1056	5157	1042	S
3344	AS038	1053	5113	1112	L

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3345	AS038	1100	5122	1210	S
3346	AS038	1104	5142	1248	S
3347	AS038	1105	5121	1327	S
3348	AS038	1112	5151	1346	S
3349	AS038	1116	5121	1526	S
3350	AS038	1116	5151	1525	M
3351	AS038	1124	5116	1700	S
3352	AS038	1142	5155	2004	S
3353	AS038	1056	5201	1050	S
3354*	AS034	1200	5246	1140	350 ft
3355	AS038	1101	5201	1122	S
3356*	AS034	1200	5250	1147	
3357	AS034	1250	5248	1250	
3358	AS034	1250	5257	1249	
3359	AS038	1115	5203	1410	S
3360	AS038	1115	5202	1426	S
3361	AS037	1158	5215	1738	M
3362	AS037	1151	5240	1947	M
3363*	AS034	1200	5305	1154	
3364*	AS034	1200	5356	1142	165 ft
3365*	AS034	1200	5345	1139	250 ft
3366*	AS034	1200	5349	1129	165 ft
3367*	AS034	1200	5351	1119	200 ft
3368*	AS034	1200	5358	1107	200 ft
3369*	AS034	1200	5331	1243	165 ft
3370*	AS034	1200	5328	1201	
3371*	AS034	1200	5326	1208	165 ft
3372*	AS034	1200	5312	1204	
3373*	AS034	1345	5327	1212	165 ft
3374*	AS034	1349	5332	1227	165 ft
3375*	AS034	1200	5336	1222	165 ft
3376*	AS034	1200	5340	1327	634 ft

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SHIP LOCATIONS - 29 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3377*	AS034	1200	5315	1416	100 ft
3378	AS037	1218	5338	2154	M
3379	AS037	1122	5358	2426	S
3380	AS037	1125	5327	2422	M
3381	AS034	0813	5427	0945	
3382	AS034	0814	5436	0951	
3383*	AS034	1334	5426	0959	S
3384*	AS034	1509	5400	1039	L
3385	AS034	1510	5439	1030	
3386	AS034	0816	5401	1140	
3387*	AS036	1200	5456	1250	
3388	AS034	0826	5427	1345	
3389	AS033	1014	5551	0649	
3390	AS033	1141	5523	0613	M
3391	AS033	1141	5512	0647	S
3392	AS033	1141	5525	0708	S
3393	AS033	1144	5534	0737	S
3394*	AS033	1200	5551	0717	
3395	AS033	1144	5543	0716	S
3396*	AS033	1200	5553	0703	240 ft
3397	AS033	1005	5540	0824	
3398	AS033	1005	5537	0827	
3399	AS033	1005	5547	0819	
3400	AS033	1200	5557	0805	
3401	AS034	0814	5522	1104	
3402	AS034	0815	5528	1156	
3403	AS034	0818	5521	1236	
3404*	AS036	1200	5512	1320	
3405*	AS036	1200	5525	1350	661 ft
3406*	AS036	1200	5508	1411	535 ft
3407*	AS034	1200	5513	1524	600 ft

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3408	AS036	1153	5519	1645	
3409	AS036	1154	5554	1758	
3410	AS037	1225	5522	2101	S
3411	AS033	1014	5607	0638	
3412*	AS033	1200	5622	0658	180 ft
3413*	AS033	1200	5640	0654	150 ft
3414	AS033	1040	5648	0628	
3415*	AS033	1200	5607	0657	
3416*	AS033	1200	5628	0645	
3417*	AS033	1200	5620	0708	
3418	AS033	1036	5641	0715	
3419	AS033	1040	5649	0700	
3420*	AS033	1200	5607	0752	150 ft
3421*	AS033	1200	5615	0744	
3422*	AS033	1200	5603	0726	
3423*	AS033	1200	5618	0736	
3424	AS033	1211	5624	0752	
3425*	AS033	1200	5611	0711	
3426	AS033	0933	5617	0806	S
3427	AS033	0933	5619	0808	
3428	AS033	0933	5620	0811	
3429	AS033	1023	5659	0809	
3430	AS033	1023	5641	0852	
3431	AS033	1200	5627	0852	
3432*	AS036	1200	5621	1322	
3433*	AS036	1200	5613	1355	
3434*	AS036	1200	5608	1412	
3435*	AS036	1200	5645	1757	M
3436*	AS036	1200	5641	1902	
3437*	AS036	1200	5640	1904	M
3438*	AS033	1200	5714	0642	180 ft
3439	AS033	1040	5700	0648	
3440	AS033	1303	5740	0740	

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3441	AS033	1352	5758	0828	S
3442	AS033	1352	5757	0831	S
3443	AS033	1352	5757	0834	S
3444	AS037	0909	5736	0834	M
3445	AS037	0909	5736	0834	M
3446	AS037	0909	5736	0834	M
3447	AS037	0915	5714	1112	S
3448*	AS035	1200	5755	1204	486 ft
3449*	AS035	1200	5750	1358	50 ft
3450	AS035	0925	5740	1924	
3451*	AS033	1200	5850	0651	
3452	AS033	1245	5815	0707	S
3453*	AS033	1200	5852	0740	110 ft
3454*	AS033	1200	5852	0700	S
3455*	AS033	1200	5858	0800	110 ft
3456*	AS033	1200	5827	0826	S
3457*	AS033	1200	5843	1000	220 ft
3458	AS037	0913	5821	1014	L
3459*	AS035	1200	5840	1347	536 ft
3460	AS037	0933	5857	1514	M
3461*	AS035	1200	5820	1545	474 ft
3462	AS037	1248	5809	2020	L
3463	AS040A	1146	5901	0034	S
3464	AS040A	1144	5906	0117	S
3465	AS040A	0943	5940	0202	M
3466	AS040B	1704	5906	0355	M

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SHIP LOCATIONS - 29 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3467	AS040B	1654	5941	0451	M
3468	AS040B	1654	5943	0452	M
3469	AS040B	1701	5926	0414	M
3470	AS040B	1701	5910	0429	M
3471	AS040B	1701	5925	0402	M
3472	AS040B	1704	5912	0406	M
3473	AS040B	1704	5905	0442	M
3474	AS040B	1704	5958	0412	S
3475	AS040A	1345	5934	0509	L
3476	AS040A	1345	5934	0509	M
3477	AS040A	1345	5934	0509	M
3478	AS040A	1345	5934	0509	M
3479	AS040A	1345	5934	0509	M
3480	AS040A	1345	5934	0509	S
3481	AS040A	1345	5934	0509	S
3482	AS040A	1345	5934	0509	S
3483	AS040A	1345	5934	0509	S
3484	AS033	1328	5900	0603	
3485*	AS033	1200	5903	0710	110 ft
3486*	AS033	1200	5915	0944	180 ft
3487	AS037	0921	5904	1127	M
3488*	AS035	1200	5901	1221	60 ft
3489	AS040A	1058	5932	1205	M
3490	AS040B	1627	5941	1336	M
3491	AS040B	1627	5941	1336	S
3492	AS040B	1627	5941	1336	S
3493	AS035	0809	5919	2006	

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SHIP LOCATIONS - 29 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3494	AS040B	1513	6030	0042E	M
3495	AS040B	1513	6030	0042E	M
3496	AS040B	1513	6030	0042E	M
3497	AS040B	1513	6030	0042E	M
3498	AS040B	1513	6030	0042E	M
3499	AS040B	1513	6030	0042E	M
3500	AS040B	1513	6030	0042E	M
3501	AS040B	1515	6045	0020E	M
3502	AS040B	1515	6054	0049E	M
3503	AS040B	1519	6058	0058E	M
3504	AS040B	1519	6042	0040E	S
3505	AS040B	1519	6042	0040E	S
3506	AS040B	1519	6042	0040E	S
3507	AS040B	1515	6057	0152	M
3508	AS040B	1515	6055	0106	M
3509	AS040B	1515	6032	0200	S
3510	AS040B	1519	6047	0210	S
3511	AS040B	1519	6047	0210	S
3512	AS040B	1658	6026	0242	S
3513	AS040B	1658	6026	0242	S
3514	AS040B	1658	6026	0242	S
3515	AS040B	1658	6026	0242	S
3516	AS040B	1658	6026	0242	S
3517	AS040B	1658	6026	0242	S
3518	AS040B	1653	6002	0355	S
3519	AS040B	1653	6002	0355	S
3520	AS040B	1653	6002	0355	S
3521	AS040B	1653	6002	0355	S
3522	AS040B	1653	6002	0355	S
3523	AS040B	1653	6002	0355	S
3524	AS040B	1653	6002	0355	S
3525	AS040A	1125	6052	0411	M
3526	AS040B	1649	6036	0532	M
3527	AS040A	1330	6045	0635	M
3528	AS040A	1330	6045	0635	S
3529	AS040B	1647	6049	0705	M
3530	AS040A	1100	6020	1115	L

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SHIP LOCATIONS - 29 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3531	AS040A	1058	6048	1213	M
3532	AS040A	1106	6011	1229	M
3533	AS040A	1106	6011	1229	M
3534	AS040B	1627	6000	1325	M
3535	AS040B	1618	6053	1455	S
3536	AS040B	1619	6034	1404	M
3537	AS037	0936	6007	1457	S
3538	AS040B	1519	6134	0050E	M
3539	AS040A	1003	6158	0315	S
3540	AS040B	1538	6140	0434	S
3541	AS040A	1123	6116	0542	M
3542	AS040A	1330	6100	0645	M
3543	AS040A	1330	6100	0645	S
3544	AS040B	1548	6138	0735	S
3545	AS040A	1324	6117	0806	M
3546	AS040A	1327	6112	0850	M
3547	AS040A	1032	6142	0945	L
3548	AS040A	1321	6109	0902	M
3549	AS040A	1324	6118	0902	M
3550	AS040B	1558	6134	1018	M
3561	AS040B	1558	6125	1034	S
3552	AS040B	1635	6110	1039	M
3553	AS040A	1101	6114	1215	M
3554	AS040A	1049	6124	1330	L
3555	AS030A	1049	6127	1324	L
3556	AS040B	1614	6146	1512	S
3557	AS037	0954	6153	1738	M
3558	AS040B	1544	6234	0520	S
3559	AS040A	1225	6208	0559	M
3560	AS040A	1229	6258	0556	M

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3561	AS040A	1229	6252	0618	M
3562	AS040A	1229	6252	0618	S
3563	AS040A	1229	6252	0618	S
3564	AS040A	1229	6252	0618	S
3565	AS040A	1229	6257	0618	M
3566	AS040A	1229	6257	0618	M
3567	AS040A	1229	6257	0618	M
3568	AS040A	1229	6252	0710	M
3569	AS040A	1229	6231	0728	M
3570	AS040A	1229	6234	0755	M
3571	AS040A	1233	6214	0816	M
3572	AS040B	1555	6238	0903	S
3573	AS040B	1555	6203	1020	S
3574	AS040A	1029	6218	1009	M
3575	AS040A	1029	6204	1120	M
3576	AS040A	1246	6204	1250	L
3577	AS040A	1246	6204	1250	L
3578	AS040A	1246	6204	1250	L
3579	AS040A	1246	6200	1248	M
3580	AS040A	1246	6200	1248	M
3581	AS040A	1253	6229	1225	L
3582	AS040B	1612	6245	1329	M

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The following ships were outside the region of 1° x 1° cells that were fully surveyed.

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3583	AS039	1312	4153	0937	S
3584	AS039	1312	4153	0937	S
3585	AS039	1313	4158	0904	S
3586	AS039	1313	4158	0904	S
3587	AS039	1313	4158	0904	S
3588	AS039	1313	4158	0904	S
3589	AS039	1313	4158	0904	S
3590	AS039	1313	4142	0938	S
3591	AS039	1313	4142	0938	S
3592	AS039	1313	4142	0938	S
3593	AS039	1313	4152	0906	M
3594	AS039	1307	4144	1126	M
3595	AS039	1441	4424	0344	M
3596	AS039	1441	4458	0403	M
3597	AS039	1441	4458	0403	M

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Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3598	AS039	1446	4541	0353	S
3599	AS039	1446	4541	0353	S
3600	AS039	1446	4541	0353	S
3601	AS039	1446	4541	0353	S
3602	AS039	1446	4541	0353	S
3603	AS039	1446	4541	0353	S
3604	AS039	1446	4541	0353	S
3605	AS039	1446	4541	0353	S
3606	AS039	1446	4541	0353	S
3607	AS039	1446	4541	0353	S
3608	AS039	1446	4551	0351	S
3609	AS039	1446	4551	0351	S
3610	AS039	1446	4551	0351	S
3611	AS039	1446	4551	0351	S
3612	AS039	1446	4551	0351	S
3613	AS039	1446	4551	0351	S
3614	AS039	1446	4551	0351	S
3615	AS039	1446	4551	0351	S
3616	AS039	1446	4551	0351	S
3617	AS039	1446	4551	0351	S
3618	AS039	1242	4548	1309	M
3619	AS038	1453	4553	2152	M
3620	AS039	1447	4614	0355	M
3621	AS039	1452	4630	0340	S
3622	AS039	1452	4600	0344	S
3623	AS039	1458	4744	0358	S
3624	AS039	1458	4744	0358	S
3625	AS038	1423	4704	2708	M
3626	AS038	1418	4854	2708	M
3627	AS040B	1502	5821	0020E	M
3628	AS040B	1502	5833	0023E	S
3629	AS040B	1502	5836	0133	M
3630	AS040B	1502	5830	0141	M
3631	AS040B	1704	5858	0412	S

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SHIP LOCATIONS - 29 August 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
3632	AS040A	1150	5901	0010E	M
3633	AS040A	1150	5901	0010E	M
3634	AS040A	1153	5953	0011E	M
3635	AS040A	1153	5953	0011E	M
3636	AS040A	1203	6115	0115E	M
3637	AS040A	1203	6115	0115E	M
3638	AS040A	1203	6115	0115E	S
3639	AS040A	1207	6153	0110E	M
3640	AS037	1014	6131	2120	L
3641	AS040B	1524	6208	0017E	M
3642	AS040A	1241	6302	0942	M
3643	AS037	1101	6306	1712	M
3644	AS037	1015	6301	2052	L

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Ship Designation	Ship Name	Nationality and Type	Speed (Knots)		Course (°)		Length (ft)	
			Visual	Calculated	Visual	Calculated	Publication	Visual
3354	Disarsell	Coaster	10	11.4 DIW	350	355		350
3356								
3363		Irish Fisher	9	8.4	250	180		165
3364		U.K. Trawler	DIW	4.6		204		250
3365		Irish Fisher	5		015			165
3366		Irish Trawler	5		350			200
3367		Irish Trawler	7		250			200
3368		Fisher	5		270			165
3369								
3370		Irish Fisher	5	2.8	020	032		165
3371								
3372		Irish Fisher		4.0		090		165
3373		Fisher						165
3374		Fisher	5	6.0	240	215		165
3375		Bulk Carrier	13	11.3	050	067		634
3376	Alfredo Primo							
3377		Irish Fisher	5	3.8	020	031		100
3383		Russian AGI	10		310			
3384		Frigate						
3387								
3394		Russian Freighter		DIW				
3396	Timber		12	8.6	150	171		240
3404				13.9		173		
3405	American Ace		11	2.6	270	281	661	
				11.9		270		
3406	Habbjorn		10	6.4	030	011	535	
3407		Russian Bulk Carrier	17	12.5	045	016		600
3412	Atlantic Star	Bulk Carrier	15		185			180
3413	Vilerc	Coaster	12	DIW	180			150
3415				DIW				
3416								

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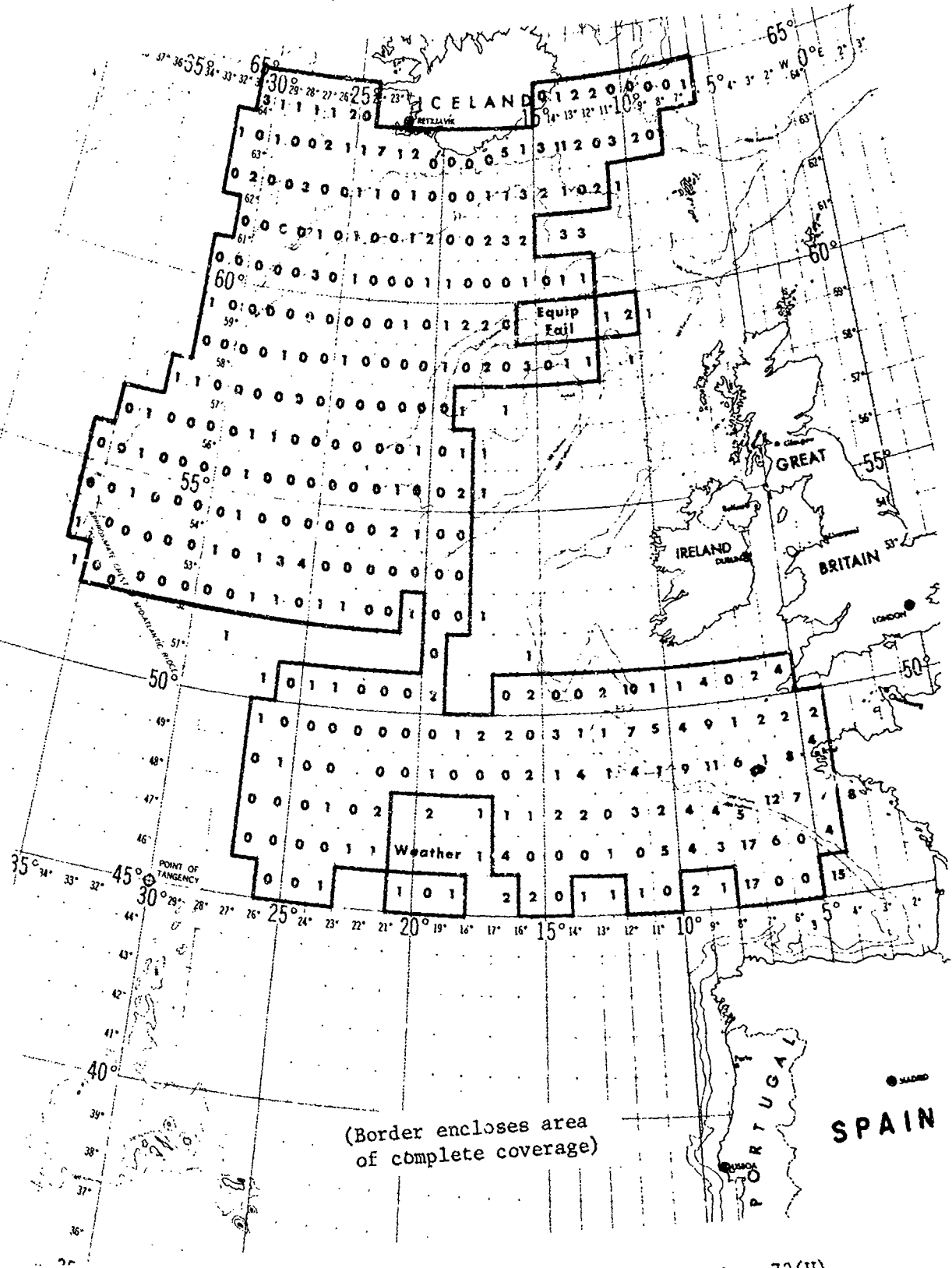
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SHIP ATTRIBUTES - 29 August 1973

Ship Designation	Ship Name	Nationality and Type	Speed (knots)		Course (°)		Length (ft)	
			Publication	Visual	Calculated	Visual	Publication	Visual
3417	Supia	Trawler	8	210	186	150		
3420								
3421								
3422								
3423								
3425	Subic	Research Vessel	DIW 2	180	091			
3432								
3433								
3434								
3435								
3436	Sennaita	Tanker	3	020	486	180		
3437								
3438								
3448								
3449								
3451	Maersk	Trawler	DIW 4	250	203	110		
3453								
3454								
3455								
3456								
3457	Mont Louis	Container Ship	10	110	145	220		
3459								
3461								
3485								
3486								
3488	Rubibintl	Norwegian Tanker	13	095	536	110		
	W. German Tanker	British Stern Trawler	10	075	474	180		
	L5766	Coaster Trawler	5	230	207	60		
	Rubibintl	Coaster Trawler	15	110	119	180		

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(Border encloses area of complete coverage)

FIGURE A4(C) -- Ship Counts on 8 September 73(U)
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SHIP LOCATIONS - 8 September 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
4001	AS057B	1436	4535	0735	L
4002	AS057B	1436	4549	0739	M
4003	AS057B	1436	4549	0739	M
4004	AS057B	1436	4549	0739	M
4005	AS057B	1436	4549	0739	M
4006	AS057B	1436	4549	0739	M
4007	AS057B	1436	4549	0739	M
4008	AS057B	1440	4534	0755	M
4009	AS057B	1440	4534	0755	M
4010	AS057B	1440	4534	0755	M
4011	AS057B	1440	4509	0743	M
4012	AS057B	1440	4509	0743	M
4013	AS057B	1440	4509	0743	M
4014	AS057B	1440	4509	0743	M
4015	AS057B	1440	4509	0743	M
4016	AS057B	1440	4509	0743	M
4017	AS057B	1440	4509	0743	M
4018	AS057B	1330	4551	1131	L
4019	AS057B	1240	4520	1538	S
4020	AS057B	1240	4540	1555	S
4021	AS055	1411	4542	1818	S
4022	AS055	1357	4518	2029	M
4023	AS055	1250	4521	2320	M
4024	AS057B	1448	4601	0426	L
4025	AS057B	1448	4601	0426	M
4026	AS057B	1448	4601	0426	M
4027	AS057B	1457	4652	0423	M
4028	AS057B	1428	4647	0642	M
4029	AS057B	1428	4647	0642	M
4030	AS057B	1428	4647	0642	M
4031	AS057B	1428	4637	0622	S
4032	AS057B	1428	4658	0632	S
4033	AS057B	1428	4640	0650	M

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SHIP LOCATIONS - 8 September 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
4034	AS057B	1432	4611	0704	M
4035	AS057B	1432	4611	0704	M
4036	AS057B	1432	4611	0704	M
4037	AS057B	1432	4611	0704	M
4038	AS057B	1432	4611	0704	M
4039	AS057B	1432	4611	0704	M
4040	AS057B	1436	4640	0755	L
4041	AS057B	1436	4655	0703	S
4042	AS057B	1436	4655	0703	S
4043	AS057B	1436	4606	0714	S
4044	AS057B	1436	4606	0714	S
4045	AS057B	1436	4618	0748	M
4046	AS057B	1436	4603	0747	L
4047	AS057B	1436	4609	0700	S
4048	AS057B	1436	4609	0700	S
4049	AS057B	1436	4609	0700	S
4050	AS057B	1440	4613	0745	L
4051	AS057B	1346	4612	0842	L
4052	AS057B	1352	4653	0830	L
4053	AS057B	1355	4644	0829	M
4054	AS057B	1344	4612	0922	M
4055	AS057B	1344	4628	0958	S
4056	AS057B	1344	4648	0953	L
4057	AS057B	1352	4648	0913	M
4058	AS057B	1339	4608	1026	M
4059	AS057B	1352	4651	1011	M
4060	AS057B	1352	4625	1028	L
4061	AS057B	1352	4628	1026	S
4062	AS057B	1352	4615	1022	S
4063	AS057B	1330	4605	1241	L
4064	AS057B	1223	4623	1625	M
4065	AS057B	1223	4609	1600	M
4066	AS057B	1238	4646	1625	L
4067	AS057B	1238	4632	1600	M
4068	AS055	1347	4636	2134	S
4069	AS055	1258	4658	2258	M

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SHIP LOCATIONS - 8 September 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
4070	AS057	1457	4705	0440	M
4071	AS057B	1457	4708	0404	L
4072	AS057B	1459	4727	0440	M
4073	AS057B	1459	4723	0450	M
4074	AS057B	1459	4728	0428	L
4075	AS057B	1501	4751	0449	M
4076	AS057B	1501	4729	0439	M
4077	AS057B	1420	4741	0538	M
4078	AS047B	1420	4741	0538	M
4079	AS057B	1420	4741	0538	M
4080	AS057B	1420	4750	0535	M
4081	AS057B	1420	4757	0509	M
4082	AS057B	1420	4757	0509	S
4083	AS057B	1420	4734	0550	S
4084	AS057B	1414	4750	0655	M
4085	AS057B	1414	4750	0655	M
4086	AS057B	1501	4700	0623	M
4087	AS057B	1501	4700	0623	S
4088	AS057B	1501	4707	0628	M
4089	AS057B	1501	4710	0620	M
4090	AS057B	1501	4720	0618	M
4091	AS057B	1501	4720	0618	M
4092	AS057B	1501	4722	0609	M
4093	AS057B	1501	4734	0606	M
4094	AS057B	1501	4734	0606	M
4095	AS057B	1501	4734	0606	M
4096	AS057B	1404	4747	0755	M
4097	AS057B	1428	4721	0716	M
4098	AS057B	1428	4723	0730	M
4099	AS057B	1428	4710	0720	M
4100	AS057B	1428	4752	0709	M
4101	AS057B	1352	4710	0848	L
4102	AS057B	1358	4752	0822	L
4103	AS057B	1404	4741	0826	M
4104	AS057B	1404	4732	0815	M
4105	AS057B	1352	4714	0919	M
4106	AS057B	1358	4748	0911	M
4107	AS057B	1404	4740	0911	S
4108	AS057B	1406	4756	0945	M

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SHIP LOCATIONS - 8 September 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
4109	AS057B	1322	4730	1000	M
4110	AS057B	1322	4723	1002	M
4111	AS057B	1320	4739	1150	M
4112	AS057B	1320	4739	1150	S
4113	AS057B	1320	4739	1150	S
4114	AS057B	1250	4709	1360	M
4115	AS057B	1250	4731	1339	M
4116	AS057B	1218	4734	1450	M
4117	AS057B	1218	4734	1450	M
4118	AS057B	1213	4758	1555	S
4119	AS057B	1213	4729	1611	M
4120	AS055	1344	4708	2156	M
4121	AS055	1344	4735	2155	S
4122	AS055	1304	4752	2326	M
4123	AS057B	1421	4831	0451	M
4124	AS057B	1421	4831	0451	M
4125	AS057B	1425	4823	0456	M
4126	AS057B	1425	4812	0449	M
4127	AS057B	1416	4831	0554	L
4128	AS057B	1420	4810	0512	M
4129	AS057B	1420	4808	0505	M
4130	AS057B	1420	4817	0500	M
4131	AS057B	1420	4817	0500	S
4132	AS057B	1420	4817	0500	S
4133	AS057B	1420	4831	0544	M
4134	AS057B	1425	4816	0503	M
4135	AS057B	1418	4856	0601	S
4136	AS057B	1404	4805	0752	M
4137	AS057B	1408	4824	0727	M
4138	AS057B	1412	4859	0730	M
4139	AS057B	1412	4849	0725	M
4140	AS057B	1412	4823	0705	M
4141	AS057B	1412	4808	0730	M

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SHIP LOCATIONS - 8 September 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
4142	AS057B	1404	4802	0819	M
4143	AS057B	1404	4802	0819	M
4144	AS057B	1404	4802	0819	M
4145	AS057B	1404	4816	0806	L
4146	AS057B	1404	4808	0832	M
4147	AS057B	1404	4819	0850	M
4148	AS057B	1412	4800	0813	S
4149	AS057B	1412	4800	0813	S
4150	AS057B	1412	4806	0826	M
4151	AS057B	1412	4806	0826	M
4152	AS057B	1412	4805	0800	M
4153	AS057B	1316	4843	0950	M
4154	AS057B	1316	4843	0950	M
4155	AS057B	1317	4849	0956	M
4156	AS057B	1404	4815	0933	M
4157	AS057B	1404	4800	0941	M
4158	AS057B	1406	4802	0935	M
4159	AS057B	1406	4804	0941	M
4160	AS057B	1408	4853	0912	L
4161	AS057B	1408	4834	0950	L
4162	AS057B	1313	4831	1058	S
4163	AS057B	1310	4822	1108	L
4164	AS057B	1310	4822	1108	S
4165	AS057B	1310	4822	1108	S
4166	AS057B	1310	4822	1108	S
4167	AS057B	1302	4808	1213	S
4168	AS057B	1254	4807	1357	M
4169	AS057B	1302	4844	1302	M
4170	AS057B	1302	4844	1302	S
4171	AS057B	1302	4844	1302	S
4172	AS057B	1255	4803	1443	L
4173	AS057B	1203	4835	1551	M
4174	AS057B	1213	4803	1535	S
4175	AS055	1424	4801	1911	M
4176	AS057B	1224	4802	2623	S

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SHIP LOCATIONS - 8 September 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
4177	AS057B	1513	4916	0410	M
4178	AS057B	1513	4903	0405	M
4179	AS057B	1113	4936	0524	M
4180	AS057B	1113	4920	0550	M
4181	AS057B	1113	4925	0618	M
4182	AS057B	1113	4934	0614	M
4183	AS057B	1114	4922	0716	M
4184	AS057B	1117	4939	0820	L
4185	AS057B	1119	4945	0833	M
4186	AS057B	1119	4945	0833	M
4187	AS057B	1123	4935	0802	M
4188	AS057B	1123	4934	0814	M
4189	AS057B	1123	4934	0817	M
4190	AS057B	1123	4920	0835	L
4191	AS057B	1123	4910	0812	L
4192	AS057B	1123	4912	0821	M
4193	AS057B	1125	4927	0927	M
4194	AS057B	1128	4911	0943	L
4195	AS057B	1133	4908	0923	L
4196	AS057B	1133	4901	0959	L
4197	AS057B	1130	4954	1035	S
4198	AS057B	1130	4954	1035	S
4199	AS057B	1130	4946	1045	S
4200	AS057B	1130	4953	1051	S
4201	AS057B	1133	4950	1037	M
4202	AS057B	1133	4956	1135	S
4203	AS057B	1133	4956	1135	S
4204	AS057B	1135	4928	1133	L
4205	AS057B	1135	4928	1133	M
4206	AS057B	1135	4928	1133	S
4207	AS057B	1135	4928	1133	S
4208	AS057B	1135	4928	1133	S
4209	AS057B	1140	4914	1221	L
4210	AS057B	1143	4952	1323	S
4211	AS057B	1146	4947	1431	M
4212	AS057B	1152	4906	1452	M
4213	AS057B	1203	4907	1422	M

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SHIP LOCATIONS - 8 September 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
4214	AS057B	1156	4930	1605	M
4215	AS057B	1158	4935	1634	S
4216	AS055	1448	4942	1732	M
4217	AS055	1448	4942	1732	M
4218	AS055	1434	4917	1816	M
4219	AS055	1207	4938	2611	M
4220	AS057B	1113	5039	0551	L
4221	AS057B	1113	5039	0544	M
4222	AS057B	1114	5056	0542	M
4223	AS057B	1114	5049	0525	L
4224	AS057B	1113	5039	0612	L
4225	AS057B	1114	5036	0610	M
4226	AS057B	1117	5001	0830	M
4227	AS057B	1117	5002	0807	S
4228	AS057B	1119	5010	0851	M
4229	AS057B	1119	5023	0850	M
4230	AS057B	1126	5036	0920	M
4231	AS057B	1130	5035	1055	M
4232	AS057B	1130	5001	1112	M
4233	AS057B	1130	5001	1112	S
4234	AS057B	1133	5001	1105	M
4235	AS057B	1133	5029	1116	M
4236	AS057B	1133	5029	1116	M
4237	AS057B	1133	5029	1116	S
4238	AS057B	1133	5029	1116	S
4239	AS057B	1133	5002	1129	S
4240	AS057B	1133	5002	1129	S
4241	AS057B	1135	5054	1106	M
4242	AS057B	1140	5032	1256	L
4243	AS057B	1143	5048	1237	S
4244	AS055	1452	5004	1522	M
4245	AS055	1452	5000	1516	M
4246	AS055	1131	5055	1911	M
4247	AS055	1131	5059	1955	S

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SHIP LOCATIONS - 8 September 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
4248	AS055	1318	5002	2337	M
4249	AS055	1154	5032	2426	M
4250	AS052	1420	5242	2307	
4251*	AS053	1200	5259	2421	613 ft
4252	AS052	1405	5233	2655	
4253	AS052	1357	5254	2759	
4254*	AS053	1200	5317	2508	530 ft
4255*	AS053	1200	5336	2549	475 ft
4256	AS054	1307	5358	2559	M
4257	AS054	1307	5349	2507	M
4258	AS052	1352	5308	2645	
4259	AS052	1353	5328	2637	
4260	AS052	1403	5315	2612	
4261	AS054	1307	5325	2740	M
4262*	AS052	1200	5351	2942	200 ft
4263	AS054	1144	5342	3538	L
4264	AS054	1408	5416	2056	S
4265	AS054	1407	5412	2125	M
4266	AS054	1411	5451	2124	S
4267	AS054	1233	5434	2855	M
4268*	AS052	1200	5421	3348	
4269	AS054	1420	5543	1852	L
4270	AS054	1420	5533	1839	L
4271	AS054	1036	5558	2157	M
4472	AS054	1237	5536	2830	S
4273	AS054	1135	5503	3349	L
4274	AS054	1021	5622	1841	M

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SHIP LOCATIONS - 8 September 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
4275	AS054	1024	5607	2043	M
4276*	AS053	1200	5653	2748	150 ft
4277	AS052	0804	5659	2824	
4278	AS054	1121	5651	3350	L
4279	AS052	1101	5727	3152	
4280*	AS052	1200	5737	3227	429 ft
4281	AS051	1556	5822	1247	
4282	AS051	1556	5828	1312	
4283	AS057A	1026	5839	1519	M
4284	AS057A	1026	5811	1504	M
4285	AS057A	1030	5822	1559	L
4286*	AS051	1200	5800	1718	
4287*	AS051	1200	5804	1731	
4288*	AS051	1200	5859	1937	
4289*	AS051	1200	5838	2401	600 ft
4290	AS057A	1125	5818	2756	S
4291*	AS050	1200	5907	1059	
4292*	AS050	1200	5907	1059	
4293*	AS050	1200	5903	1105	252 ft
4294	AS050	0832	5930	1728	
4295	AS051	0915	5929	1707	
4296	AS051	0915	5912	1837	
4297*	AS051	1200	5911	1854	362 ft
4298*	AS051	1200	5910	1904	
4299*	AS051	1200	5914	2132	285 ft

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SHIP LOCATIONS - 8 September 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
4300	AS057A	1145	5952	3154	M
4301	AS050	1446	6008	1200	
4302	AS050	1444	6017	1334	
4303	AS050	0818	6030	1510	
4304*	AS050	1200	6024	1903	455 ft
4305	AS056	1213	6047	2020	S
4306	AS050	0937	6047	2455	
4307	AS057A	1208	6037	2626	L
4308	AS057A	1213	6037	2620	L
4309	AS057A	1217	6033	2628	M
4310	AS056	1225	6110	1524	S
4311	AS056	1229	6103	1556	S
4312*	AS050	1200	6120	1654	648 ft
4313*	AS050	1200	6155	1607	100 ft
4314*	AS050	1200	6110	1612	120 ft
4315*	AS050	1200	6126	1753	60 ft
4316	AS056	1219	6140	1713	S
4317	AS056	1210	6141	2000	M
4318*	AS050	1200	6101	2026	90 ft
4319	AS052	1208	6113	2142	S
4320	AS052	0709	6102	2413	
4321	AS056	1157	6142	2640	S
4322	AS056	1241	6216	1115	S
4323	AS056	1243	6201	1115	S
4324	AS056	1237	6206	1350	S
4325	AS056	1229	6201	1407	S
4326	AS056	1234	6227	1400	M

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SHIP LOCATIONS - 8 September 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
4327	AS056	1229	6244	1537	S
4328	AS056	1229	6244	1537	S
4329	AS056	1229	6236	1531	M
4330	AS056	1029	6242	1650	S
4331	AS056	1025	6246	1708	L
4332	AS052	0711	6203	2112	
4333	AS056	1049	6222	2300	S
4334	AS052	0706	6253	2431	
4335	AS056	1141	6240	2735	L
4336	AS056	1141	6240	2735	S
4337	AS056	1141	6240	2735	S
4338	AS056	1140	6252	3020	S
4339	AS056	1140	6235	3042	M
4340	AS056	1243	6321	0952	M
4341	AS056	1243	6321	0952	M
4342	AS056	1001	6343	1052	L
4343	AS056	1242	6317	1029	S
4344	AS056	1242	6317	1029	S
4345	AS056	1238	6310	1200	M
4346	AS056	1238	6305	1205	S
4347	AS056	1008	6358	1319	S
4348	AS056	1008	6358	1319	S
4349	AS056	1010	6323	1320	M
4350	AS056	1010	6350	1352	S
4351	AS056	1010	6350	1352	S
4352	AS056	1010	6350	1352	S
4353	AS056	1010	6350	1352	S
4354	AS056	1010	6350	1352	S
4355	AS056	1010	6350	1352	S
4356	AS056	1010	6350	1352	S
4357	AS056	1016	6315	1350	S

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SHIP LOCATIONS - 8 September 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
4358	AS056	1012	6340	1405	S
4359	AS056	1012	6353	1416	S
4360	AS056	1020	6332	1435	M
4361	AS056	1021	6327	1510	S
4362	AS056	1020	6342	1650	L
4363	AS056	1023	6324	1615	S
4364	AS056	1023	6324	1615	S
4365	AS056	1023	6324	1622	M
4366	AS056	1023	6324	1622	S
4367	AS056	1046	6337	2140	S
4368	AS056	1046	6353	2122	M
4369	AS056	1046	6348	2222	M
4370	AS056	1046	6345	2312	S
4371	AS056	1047	6343	2312	S
4372	AS056	1047	6343	2312	S
4373	AS056	1047	6343	2312	S
4374	AS056	1047	6303	2345	S
4375	AS056	1048	6312	2330	S
4376	AS056	1048	6312	2330	S
4377	AS056	1050	6326	2408	M
4378	AS056	1053	6312	2516	S
4379	AS056	1102	6333	2615	M
4380	AS056	1107	6342	2618	M
4381	AS056	1140	6309	2940	S
4382	AS056	1119	6350	3102	S
4383	AS056	0957	6411	0645	S
4384	AS056	1003	6440	1115	S
4385	AS056	1003	6440	1115	M
4386	AS056	1005	6436	1211	M
4387	AS056	1006	6436	1234	M
4388	AS056	1009	6410	1330	M

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SHIP LOCATIONS - 8 September 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
4389	AS056	1100	6430	2555	L
4390	AS056	1107	6446	2549	S
4391	AS056	1104	6459	2601	S
4392	AS056	1107	6444	2736	S
4393	AS056	1107	6430	2806	M
4394	AS056	1111	6421	2902	S
4395	AS056	1119	6457	3010	S
4396	AS056	1119	6457	3026	S
4397	AS056	1119	6420	3059	S

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SHIP LOCATIONS - 8 September 1973

The following ships were outside the region of 1° x 1° cells that were fully surveyed.

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
4398	AS057B	1448	4444	0544	M
4399	AS057B	1448	4556	0425	S
4400	AS057B	1448	4556	0425	S
4401	AS057B	1448	4556	0425	S
4402	AS057B	1448	4556	0425	S
4403	AS057B	1448	4556	0425	S
4404	AS057B	1448	4556	0425	S
4405	AS057B	1448	4556	0425	S
4406	AS057B	1448	4556	0425	S
4407	AS057B	1448	4556	0425	S
4408	AS057B	1448	4556	0425	S
4409	AS057B	1448	4556	0425	S
4410	AS057B	1448	4556	0425	S
4411	AS057B	1448	4556	0425	S
4412	AS057B	1448	4556	0425	S
4413	AS057B	1448	4556	0425	S
4414	AS057B	1348	4512	0818	L
4415	AS057B	1342	4528	0925	M
4416	AS057B	1342	4530	0936	M
4417	AS057B	1334	4543	1256	L
4418	AS057B	1241	4554	1340	M
4419	AS057B	1227	4550	1600	S
4420	AS057B	1227	4552	1630	S
4421	AS057B	1223	4628	1705	M

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SHIP LOCATIONS - 8 September 1973

Ship Designation	Event Number Of Detecting Aircraft	Time (GMT)	Ship Latitude	Ship Longitude	Size
4422	AS057B	1501	4717	0351	M
4423	AS057B	1505	4728	0358	M
4424	AS057B	1505	4751	0350	S
4425	AS057B	1505	4751	0350	S
4426	AS057B	1505	4751	0350	S
4427	AS057B	1505	4751	0350	S
4428	AS057B	1505	4751	0350	S
4429	AS057B	1505	4751	0350	S
4430	AS057B	1218	4705	1708	M
4431	AS055	1426	4752	1917	M
4432	AS055	1428	4750	1932	M
4433	AS055	1207	5013	2643	M
4434	AS057B	1154	5101	1505	M
4435	AS052	1400	5148	2841	
4436	AS055	1115	5254	1748	S
4437	AS055	1119	5240	2001	S
4438	AS054	1150	5255	3505	L
4439	AS054	1424	5531	1729	M
4440	AS054	1019	5635	1730	L
4441	AS057A	1033	5756	1617	L
4442	AS057A	1042	5756	1840	L
4443	AS051	1603	5837	1017	
4444*	AS050	1521	5910	0928	260 ft
4445	AS056	1234	6145	1255	M
4446	AS056	1237	6147	1259	S
4447	AS050	0813	6101	1208	
4448	AS056	1231	6154	1316	M
4449	AS056	1237	6145	1328	S
4450	AS056	1238	6142	1301	S
4451	AS056	1241	6236	1054	S

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SHIP ATTRIBUTES - 8 September 1973

Ship Designation	Ship Name	Nationality and Type	Speed (Knots)		Course (°)		Length (ft)	
			Publication	Visual	Calculated	Visual	Publication	Visual
4251	Atlantic Skou	Cargo		12		090	613	
4254	Concord	Tanker		10		270	530	
4255	Solano	Finnish Freighter		15		270	475	600
4262				3	9.8	260		200
4268					10.2			
4276	A60432	Russian Whaler		5		150		150
4280	Severnny Veter	Russian Refrig. Fish Transport		10	14.4	060	429	
4286					12.6			
4287					14.0			
4288					DIW			
4289	Trentwood	Bulk Carrier			17.2	250		600
4291		Russian Okean AGI		DIW				
4292		Russian Primorye AGI		DIW				
4293	Saint Margarets	SQUARE DEAL Ship	12	DIW			252	
4297	Myer	SQUARE DEAL Ship	14	DIW			362	
4298	Nakhooka	Russian Moma			DIW	150		
4299	Kane	SQUARE DEAL Ship	14.5	DIW	2.7		285	
4304	Kingsport	SQUARE DEAL Ship	15	12	10.3	045	455	
4312	Olmeda	SQUARE DEAL Ship	19	15	15.6	230	648	
4313		German Fisherman		10		290		100
4314		U.K. Stern Trawler		12	9.8	290		120
4315		Tug		10	10.1	135		60
4318		Fisherman		10	9.6	080		90
4444	Hecia	SQUARE DEAL Ship	14				260	

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Report Number	Personal Author	Title	Publication Source (Originator)	Pub. Date	Current Availability	Class.
55	Weinstein, M. S., et al.	SUS QUALITY ASSESSMENT, SQUARE DEAL	Undersea Systems, Inc.	750207	ADA007559; ND	U
BKD2380	Unavailable	WESTLANT 74 PHASE 1 DATA SUMMARY (U)	B-K Dyanmics, Inc.	750301	NS; ND	U
TM-SA23-C44-75	Wilcox, J. D.	MOTION MODEL VALIDATION FROM LRAPP ATLANTIC TEST BED DATA	Naval Underwater Systems Center	750317	ND	U
RAFF7412; 74-482	Scheu, J. E.	SQUARE DEAL SHIPPING DENSITIES (U)	Raff Associates, Inc.	750401	ADC003198; NS; ND	U
PSI TR-004018	Barnes, A. E., et al.	ON THE ESTIMATION OF SHIPPING DENSITIES FROM OBSERVED DATA	Planning Systems Inc.	750401	AD 096582	U
NUSC TD No.4937	LaPlante, R. F., et al.	THE MOORED ACOUSTIC BUOY SYSTEM (MABS)	Naval Underwater Systems Center	750404	ADB003783; ND	U
USI 460-1-75	Weinstein, M. S., et al.	SUS SIGNAL DATA PROCESSING (U) INVESTIGATIONS CONDUCTED UNDER THE DIAGNOSTIC PLAN FOR CHURCH ANCHOR AND SQUARE DEAL SHOT DATA (U)	Underwater Systems, Inc.	750414	ADC002353; ND	U
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NRL-MR-3316	Young, A. M., et al.	AN ACOUSTIC MONITORING SYSTEMS FOR THE VIBROSEIS LOW-FREQUENCY UNDERWATER ACOUSTIC SOURCE	Naval Research Laboratory	760601	ADA028239; ND	U
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